WATER QUALITY BRANCH ACTIVITIES
1984-1985

CTIVITIES DE LA DIRECTION DE LA QUALITE
DES EAUX 1984-1985

A. SUMMARY

This report documents the Water Quality Branch's monitoring plans, laboratory operations and other activities for the fiscal year 1984-85.

The publication provides details of the Water Quality Branch headquarters and regional programs and their respective projects. The details include: goals and rationale, brief project description, station locations, frequency of sampling and parameters measured, person-years and financial resources required.

The document has been compiled from the 1984-85 project sheets, which were prepared prior to the beginning of the fiscal year, and consequently does not contain any projects initiated since then. Major omissions are not expected, however, and the projects were on schedule at printing time in August 1984. A comparison of Table 1, with Tables 3 - 5 reveals discrepancies between various numbers. The figures of Table 1, provided by the IWD-Administration, represent the actual resources allocated to the WQB as of April 1984. Tables 3-5, as mentioned above, were compiled from planning papers.

The document is for internal use by the WQB and it provides a record of the Water Quality Branch programs and projects. It should also provide useful information for senior management.

A. RESUME

Le présent rapport énonce les travaux de laboratoire, les activités de surveillance et les autres opérations que la Direction de la qualité des eaux se propose d'effectuer au cours de l'année financière 1984-1985.

On y donne des détails au sujet des programmes et des projets des bureax régionaux et de l'administration centrale de la Direction de la qualité des eaux. Des détails comprennent les objectifs et leur justification, de brèves descriptions des projets, l'emplacement des stations, la fréquence des échantillonnages, les paramètres mesurés et les ressources humaiones et financières nécessaires.

Ce document a été établi à partir des fiches de projets pour 1984-1985, lesquelles ont été rédigées avant le début de l'année financière; en conséquence, il ne donne aucun renseignement sur les projets qui ont été élaborés au cours de l'année financière. La majorité des projets y sont énumérés cependant, et aucan n'était en retard au moment de l'impression, soit en Août 1984. Une comparison du tableau 1 et des tableaux 3 à 5 indique certaines différences. Ces dernières s'expliquent du fait que les données du Tableau 1, qui ont été fournies par l'administration de la Direction générale des eaux intérieures, représentent les ressources réelles qui avaient été accordées à la Direction de la qualité des eaux en avril 1984, tandis que les tableaux 3 à 5 ont été établis à partir des fiches de projets, lesquelles ne donnent que des prévisions.

Ce document n'est destiné qu'à la Direction de la qualité des eaux. Il constitue un registre des programmes et projets de cette direction. Il devrait en outre se révéler utile aux cadres supérieurs à titre d'information.

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B. INTRODUCTION

B.1 Inland Waters Directorate

The Inland Waters Directorate (IWD) has the prime federal responsibility for monitoring freshwater resources in Canada, as well as other responsibilities. The Directorate's work, is carried out by three operational branches-Water Quality, Water Resources, and Water Planning and Management, and Research Coordination and Program Evaluation Branch at headquarters, and five regional components across Canada. Two institutes-the National Hydrology Research Institute (NHRI), in Ottawa, and the National Water Research Institute (NWRI), Burlington, comprise the main research components of the Directorate.

B.2 Purpose of the Water Quality Branch

Within IWD, the purpose of the Water Quality Branch (WQB) is to promote the conservation and enhancement of the quality of Canada's inland water resources for the economic and social benefit of Canadians by providing scientific and technical information and advice on water quality.

B.3 Role of the Water Quality Branch

The role of WQB is:

1. To provide scientific and technical information and advice to government, private agencies and the public, and to promote the wise management of the quality of waters:

   a) shared by Canada and the United States, and by one or more provinces and/or territories;

   b) on federal lands, such as national parks, Indian reserves, heritage canals; and other properties and facilities where water resource management is primarily a federal responsibility;

   c) where there is federal responsibility such as for fisheries and wildlife;

   d) subject to impact by federally funded projects.

2. To detect emerging water quality problems and to evaluate water quality issues on Canada's inland waters from a regional and national point of view.

The Branch's role is operational. Research and related support services are provided by the research institutes, NWRI and NHRI. The Branch in turn provides operational support to both institutes.

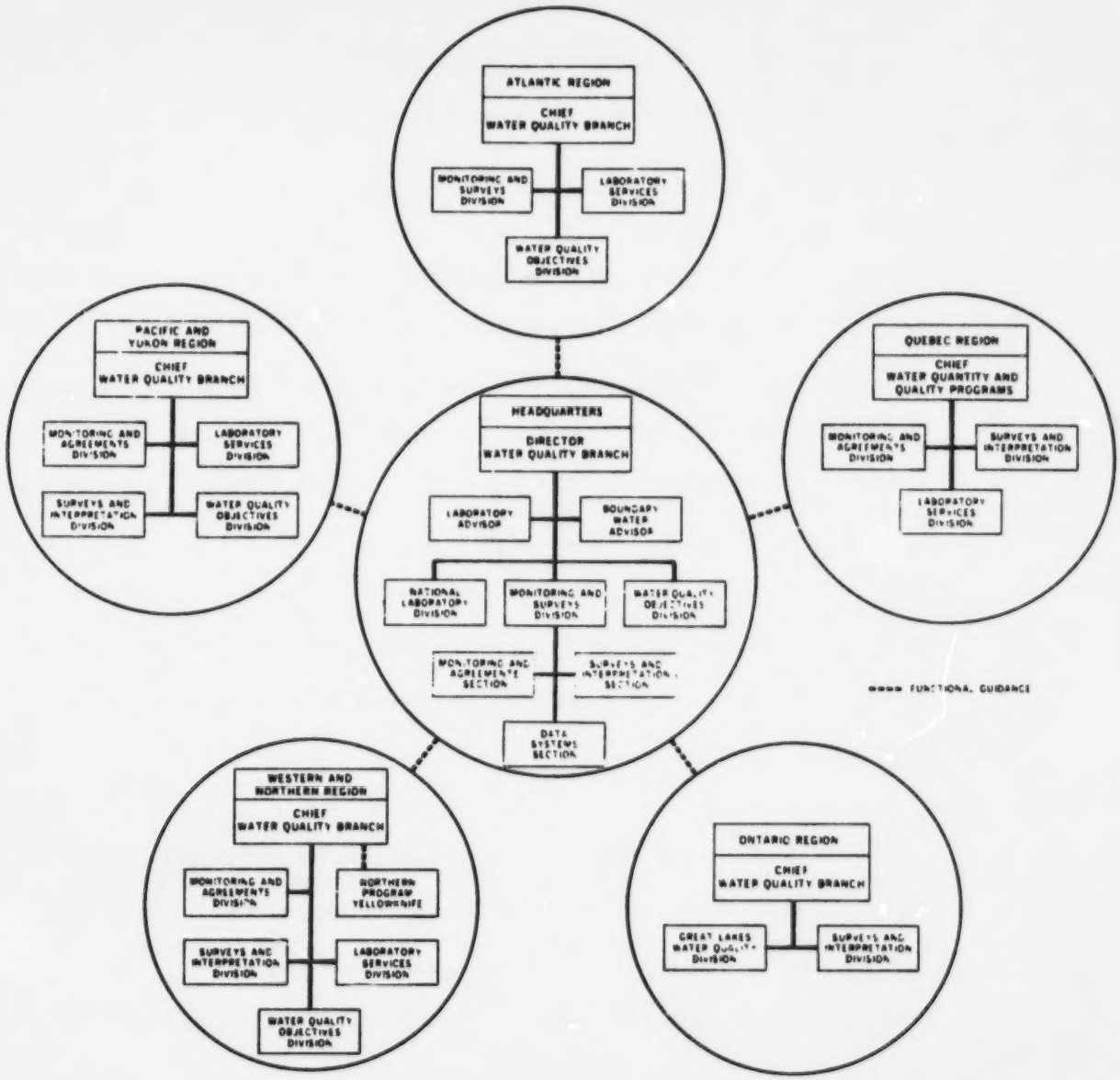
B.4 The Structure of the Water Quality Branch

The Water Quality Branch comprises an interdisciplinary team of chemists, biologists, geologists, hydrologists, geographers, mathematicians, engineers, meteorologists, and technicians, each of whom fills a specialized role in the complex undertaking of measuring and assessing water quality.

The Branch is decentralized with Headquarters in the National Capital Region and regional offices in Moncton, N.B. (Atlantic region); Longueuil, Que. (Quebec Region); Burlington, Ont. (Ontario Region); Regina, Sask. (Western and Northern Region); and Vancouver, B.C. (Pacific and Yukon Region). Western and Northern Region also has district offices located in Winnipeg, Manitoba, and Calgary, Alberta, and a water quality specialist located in Yellowknife, NWT. (See Figure B1 for a Branch organization chart).

Administratively, the Headquarters and regional components function under different lines of authority, with the Headquarters group reporting through the Water Quality Branch Director and the regional offices reporting through

FIGURE B1: SCHEMATIC ORGANIZATION OF THE HEADQUARTERS AND THE REGIONAL OFFICES OF THE WATER QUALITY BRANCH (WQB)



* FIVE REGIONAL OFFICES LOCATED IN VANCOUVER, REGINA (CALGARY, SASKATOON AND WINNIPEG), BURLINGTON, LONGUEUIL AND MONCTON.

their respective Regional Director to the Director General, Inland Waters Directorate.

B.5 Headquarters and Regional Roles

The Headquarters and the regional offices share the responsibility for delivering an effective and efficient federal water quality program. Figure B1 shows the major responsibilities and linkages of the regional offices, headquarters and the national laboratory.

Headquarters is responsible for coordinating water quality programs to meet national requirements. It also formulates national policies and provides guidance in the development of the operational plans, establishes national goals and priorities, and prepares nationally focussed water quality reports. The regional offices are responsible for planning, designing and implementing water quality programs and for providing information.

Both Headquarters and regional offices share the responsibility for identifying research needs relevant to achieving Branch objectives. Operational contacts are appointed to liaise with researchers in both government and private sectors. In this way the Branch influences the

direction of research undertaken by the two national research institutes and transfers research results to the operational program.

Headquarters is also responsible for the National Water Quality Data Bank (NAQUADAT), a computerized data storage and retrieval system operated and maintained by the Water Quality Branch. NAQUADAT contains data from some 5000 locations in Canada. The system stores the results of environmental analyses and other data about the samples and sampling locations, and produces a large variety of graphical and statistical reports.

B.5.1 Divisional Responsibilities

The Branch, at Headquarters and in the regions, has three divisions briefly described below.

B.5.2 Monitoring and Surveys Division

This Division is responsible for the measurement and assessment activities of the Branch including planning of projects, collection of samples, interpretation of data and preparation of reports.

The Division also develops policies, negotiates water quality monitoring agreements and provides information for the management of the water resource.

B.5.3 Laboratory Services Division

The Division is responsible for providing water quality data by analyzing environmental samples in the Branch laboratories located in Burlington (National Laboratory), Moncton, Longueuil, Saskatoon and Vancouver. Staff provide an advisory and consultative service to senior officials, scientists and researchers in the Department, other departments and agencies on analytical chemistry, laboratory operations, water chemistry and data interpretation. The Division maintains the "Analytical Methods Manual" which documents the approved methods and techniques used by analysts in the Branch laboratories and many other federal, provincial and private laboratories.

Headquarters, through the office of the Director, Water Quality Branch, ensures that uniform

methodologies are used, analytical data are compatible, good laboratory practices are followed, and laboratory performance is assessed and measured.

B.5.4 Water Quality Objectives Division

The Water Quality Objectives Division provides the Branch with the expertise for defining, negotiating, formulating and evaluating the benefits of water quality objectives and other tools for management of water quality. The Division considers the need to reconcile industrial growth with the need to preserve or enhance water quality.

B.6 Federal/Provincial Water Quality Agreements

In January 1982, Environment Canada obtained Cabinet approval to negotiate agreements with the provinces for the collection of water quality data and information. These agreements provide for long-term commitments and compatible data bases, accurate and comprehensive information and improved federal-provincial relations, as well as significant improvements in the efficiency and effectiveness of WQB's program.

The first province entering into negotiations was Québec in September 1982. The agreement with this province was signed in May 1984. Other negotiations, with the provinces of Newfoundland and Alberta, have reached their final phase and negotiations with British Columbia, Manitoba and New Brunswick have been initiated. It is planned to have the agreements with all ten provinces signed by 1987.

The river basin concept is the basic approach used for the planning of water quality activities covered by a given agreement. Governments cooperatively identify water quality issues of concern. Then the most representative basins related to these issues are chosen. In the basins of interest to both federal and provincial governments the cost of data collection is shared.

The agreements include joint planning and data interpretation, regular exchange of information; and compatible sampling, analytical and quality assurance protocols. Station operation varies from one agreement to another. In the Québec agreement the federal-provincial stations are operated by the Province. In the Alberta agreement all stations, including the provincial, are operated by the federal government.

B.7 Resources

In order to conduct its activities the Branch has a budget (1984-85) of $7.2 million and 140 person-years. Part of this budget is committed to analytical support of the departmental research programs. A more detailed breakdown of these resources is shown in Table 1.

B.8 Objectives of the ECS National Programs to which WQB Contributes

1.1 Canada - U.S. and Interjurisdictional Water Management

To resolve interjurisdictional water resource problems and realize interjurisdictional water resource opportunities in accordance with national interests.

1.3 Water Quality Management Data

To provide comprehensive, accurate and timely data, information and advice on the quality of Canada's Inland waters.

1.5 Water Management Research

To advance knowledge and provide information and understanding required for the solution of water management problems and the realization of water development opportunities.

1.6 Management and Administration

To plan, manage and control the policies, programs and activities of the Inland Water Directorate in an effective and efficient manner.

4.1 Toxic Chemicals

To provide information on the characteristics and presence of toxic chemicals in the environment, the pathways of these chemicals through ecosystems, and knowledge of their actual and potential impacts on the environment.

4.2 Long Range Transport of Airborne Pollutants (LRTAP)

To monitor, predict and evaluate impacts of airborne pollutants on aquatic and terrestrial ecosystems.

4.3 Environmental Assessment and Baseline Studies

To participate effectively in the Environmental Assessment and Review Process and to provide environmental knowledge and predictive capability which will ensure that federal decisions on major development proposals reflect environmental and renewable resource concerns.

Each project description of Chapter D shows the national program to which the project contributes.

C. SUMMARY OF RESOURCES (TABLES)

Table 1
Water Quality Branch
Allocation of Resources 1984-85

Item	H.Q. PVM.	H.Q. Lab.	Atl.	Que.	Ont.	W&N	P&Y	Total Allocation	Total Estimated
Person-Years	27.00	38.00	25.00	8.00	11.00	19.00	14.00	142.00	(140.71)
Salaries	1097.60	909.80	904.10	305.80	394.30	723.70	570.00	4905.30	(4797.89)
Operating	997.00	372.40	188.00	115.50	118.90	310.30	282.70	2384.80	(1822.29)
Capital	46.00	810.00	77.00	93.00	25.00	120.50	135.00	1306.50	(615.10)
TOTAL	2140.60	2092.20	1169.10	514.30	538.20	1154.50	987.70	8596.60	(7235.28)

NOTE: This table shows the resources allocated to the W.Q.Bs units at the start of the fiscal year. The bracketed totals show the estimated resources. The difference between resource allocation and estimated resources is due to early estimates and resource shifts during the year. The tables which follow are based on estimated resources.

Table 2
Summary of Stations in Water Quality Branch Programs 1984-85

ECS Programs/ WQB Projects	NFLD &LAB	PEI	NS	NB	QUE	ONT	MAN	SASK	ALTA	NWT	BC	YUK	Total
1.1 CAN-US & INTERJURISDICTIONAL WATERS													
International				25	(6)	3	1						29(6)
Great Lakes						194							194
Interprovincial	8					28							36
Atmospheric Precip.						14							14
Prairie Prov. Water Board							1	6	4				11
Water Quality Objectives											9		9
Other	9							4					13
Subtotal	17	0	0	25	0	239	2	10	4	0	9	0	306(6)
1.3 WATER QUALITY MANAGEMENT DATA													
International				(3)	(6)		6(1)	7	6		47(8)	1	67(18)
Interprovincial	8						11(1)			3	8	2	29(1)
G.E.M.S.				(1)	(1)	1	(2)		(1)	(2)	1		2(7)
Atl. Region Overview	(8)	3	7	6									16(11)
Benchmark Basins									1				1(1)
Organics in Precip.		1	1										2
W&N Adhoc Agreements								5	11				16
Nat. Parks Agreement									5	1			6
Other					50				1	17(1)		10	79
Monitoring Agreements													
Federal					86								86
Fed/Prov. (cost shared)					142								142
*Provincial					176**								176**
Subtotal	8	4	8	6	278	1	17	12	24	21	56	13	446(38)
4.1 TOXIC CHEMICALS													
Radionuclides	1		1(1)	2		(2)	(3)	(1)		(1)			4(8)
Toxic Chemicals			10	9	(101)	3(1)		(2)			4		26(104)
Subtotal	1	0	11	11	0	3	0	0	0	0	4	0	30(112)
4.2 LONG RANGE TRANSPORT OF AIRBORNE POLLUTANTS													
LRTAP Monitoring	30(6)	(2)	52(3)	4	(35)								86(46)
Subtotal	30	0	52	4	0	0	0	0	0	0	0	0	86(46)
4.3 ENVIRONMENTAL ASSESSMENT AND BASELINE STUDIES													
Northern Baseline						6							6
Subtotal	0	0	0	0	0	6	0	0	0	0	0	0	6
TOTAL FEDERAL	56	4	71	46	136	249	19	22	28	21	69	13	732
TOTAL FED./PROV.	0	0	0	0	142	0	0	0	0	0	0	0	142
TOTAL FED.& FED./PROV.	56	4	71	46	278	249	19	22	28	21	69	13	874
TOTAL PROVINCIAL*	0	0	0	0	176	0	0	0	0	0	0	0	176*
GRAND TOTAL	56	4	71	46	454	249	19	22	28	21	69	13	1052

"( )" Denotes stations that have been accounted for in other program numbers
* Data from Provincial stations are available to DOE as required.
** Not added here - but included below in Grand Total.

Table 3
Water Quality Branch
Summary of Resources by Region
for ECS National Programs - 1984-85 (estimated)

Region / ECS National Program	Person Years	Financial Resources ($'000) Salaries	O&M Contracts	Capital	Total
Headquarters					
PVM					
1.1 Canada-US & Interjurisdictional Waters	4.80	235.70	28.70	-	- 264.40
1.3 Water Quality Management Data	12.50	572.14	186.30	-	46.00 804.44
1.6 Management & Adm	3.00	137.20	76.20	-	- 213.40
4.1 Toxic Chemicals	1.30	59.63	23.20	-	- 82.83
4.2 L.R.T.A.P.	1.50	68.65	12.00	-	- 80.65
Subtotal	23.10	1073.32	326.40	.00	46.00 1445.72
National Laboratory					
1.3 Water Quality Management Data	34.00	860.00	352.40	-	180.00 1392.40
4.1 Toxic Chemicals	4.00	100.00	20.00	-	- 120.00
Subtotal	38.00	960.00	372.40	.00	180.00 1512.40
Headquarters Total	61.10	2033.32	698.80	.00	226.00 2958.12
Atlantic					
1.1 Canada-US & Interjurisdictional Waters	2.70	96.66	19.50	-	15.00 131.16
1.3 Water Quality Management Data	20.05	717.94	145.50	-	58.00 921.44
1.6 Water Management Research	.10	3.58	.70	-	- 4.28
4.1 Toxic Chemicals	1.10	39.39	6.80	-	4.00 50.19
4.2 L.R.T.A.P.	1.30	46.55	15.50	-	- 62.05
Total	25.25	904.12	188.00	.00	77.00 1169.12
Quebec					
1.3 Water Quality Management Data	8.90	286.30	139.30	-	93.10 518.70
Total	8.90	286.30	139.30	.00	93.10 518.70

Table 3 continues on next page

Table 3 (cont'd)
Water Quality Branch
Summary of Resources by Region
for ECS National Programs - 1984-85 (estimated)

Region / ECS National Program	Person Years	Financial Resources ($'000) Salaries	O&M	Contracts	Capital	Total
Ontario						
1.1 Canada-US & Interjurisdictional Waters	7.60	262.10	51.00	23.20	21.00	357.30
4.1 Toxic Chemicals	2.20	67.00	26.70	8.50	6.00	108.20
4.3 Environ. Assessment & Baseline Studies	.40	11.00	4.50	5.50	-	21.00
Total	10.20	340.10	82.20	37.20	27.00	486.50
Western & Northern						
1.1 Canada-US & Interjurisdictional Waters	4.79	182.35	64.90	-	16.86	264.11 (17.20)
1.3 Water Quality Management Data	11.69	397.17	269.83	-	82.62	749.62 (155.64)
4.1 Toxic Chemicals	2.18	78.43	59.36	-	17.52	155.31 (50.00)
Total	18.66	657.95	394.09	.00	117.00	1169.04 (222.84)
Pacific & Yukon						
1.1 Canada-US & Interjurisdictional Waters	2.50	86.80	22.80	-	-	109.60
1.3 Water Quality Management Data	11.10	385.20	213.90	-	75.00	674.10
4.1 Toxic Chemicals	3.00	104.10	46.00	-	-	150.10
Total	16.60	576.10	282.70	.00	75.00	933.80
W.Q.B. Total	140.71	4797.89	1785.09	37.20	615.10	7235.28 (222.84)

"( )"Represents Additional Recoverable Amounts

Table 4
Water Quality Branch
Summary of Resources by ECS National Programs - 1984-85 (estimated)

ECS National Program	Person Years	%	Financial Resources ($'000) Salaries	O&M	Contracts	Capital	Total	%
1.1 Canada-US and Interjurisdictional Waters	22.39	16	863.61	186.9	23.2	52.86	1126.57 (17.20)	16
1.3 Water Quality Management Data	98.24	70	3218.75	1307.23	0	534.72	5060.7 (155.64)	70
1.5 Water Management Research	.10	0	3.58	.7	0	0	4.28	0
1.6 Management & Administration	3.00	2	137.2	76.2	0	0	213.4	3
4.1 Toxic Chemicals	13.78	10	448.55	182.06	8.5	27.52	666.63 (50.00)	9
4.2 L.R.T.A.P. (Long Range Transport of Airborne Pollutants)	2.80	2	115.2	27.5	0	0	142.7	2
4.3 Environmental Assessment & Baseline Studies	.40	0	11	4.5	5.5	0	21	0
W.Q.B. Total	140.71	100	4797.89	1785.09	37.2	615.1	7235.28 (222.84)	100

"( )" Represents Additional Recoverable Amounts

Table 5
Water Quality Branch - 1984-85
Summary of Resources by ECS National Programs and Regions (estimated)

ECS National Program and Region	Person Years	%	Financial Resources ($'000) Salaries	O&M	Contracts	Capital	Total	%
1.1 CANADA-US AND INTERJURISDICTIONAL WATERS								
Headquarters	4.80	21	235.70	28.70	-	-	264.40	23
Atlantic	2.70	12	96.66	19.50	-	15.00	131.16	12
Ontario	7.60	34	262.10	51.00	23.20	21.00	357.30	32
Western & Northern	4.79	21	182.35	64.90	-	16.86	264.11 (17.20)	23
Pacific & Yukon	2.50	11	86.80	22.80	-	-	109.60	10
Total	22.39	100	863.61	186.90	23.20	52.86	1126.57 (17.20)	100
1.3 WATER QUALITY MANAGEMENT DATA								
Headquarters	46.50	47	1432.14	538.70	-	226.00	2196.84	43
Atlantic	20.05	20	717.94	145.50	-	58.00	921.44	18
Quebec	8.90	9	286.30	139.30	-	93.10	518.70	10
Western & Northern	11.69	12	397.17	269.83	-	82.62	749.62 (155.64)	15
Pacific & Yukon	11.10	11	385.20	213.90	-	75.00	674.10	13
Total	98.24	100	3218.75	1307.23	.00	534.72	5060.70 (155.64)	100
1.5 WATER MANAGEMENT RESEARCH								
Atlantic	.10	100	3.58	.70	-	-	4.28	100
Total	.10	100	3.58	.70	.00	.00	4.28	100
1.6 MANAGEMENT AND ADMINISTRATION								
Headquarters	3.00	100	137.20	76.20	-	-	213.40	100
Total	3.00	100	137.20	76.20	.00	.00	213.40	100

"( )" Represents Additional Recoverable Amounts

table 5 continues on next page

Table 5 (cont'd)
Water Quality Branch - 1984-85
Summary of Resources by ECS National Programs and Regions (estimated)

ECS National Program and Region	Person Years	%	Financial Resources ($'000) Salaries	O&M	Contracts	Capital	Total	%
4.1 TOXIC CHEMICALS								
Headquarters	5.30	38	159.63	43.20	-	-	202.83	30
Atlantic	1.10	8	39.39	6.80	-	4.00	50.19	8
Ontario	2.20	16	67.00	26.70	8.50	6.00	108.20	16
Western & Northern	2.18	16	78.43	59.36	-	17.52	155.31 (50.00)	23
Pacific & Yukon	3.00	22	104.10	46.00	-	-	150.10	23
Total	13.78	100	448.55	182.06	8.50	27.52	666.63 (50.00)	100
4.2 L.R.T.A.P. (Long Range Transport of Airborne Pollutants)								
Headquarters	1.50	54	68.65	12.00	-	-	80.65	57
Atlantic	1.30	46	46.55	15.50	-	-	62.05	43
Total	2.80	100	115.20	27.50	.00	.00	142.70	100
4.3 ENVIRONMENTAL ASSESSMENT AND BASELINE STUDIES								
Ontario	.40	100	11.00	4.50	5.50	-	21.00	100
Total	.40	100	11.00	4.50	5.50	.00	21.00	100
W.Q.B. TOTAL	140.71	100	4797.89	1785.09	37.20	615.10	7235.28 (222.84)	100

"( )"Represents Additional Recoverable Amounts

D. PROJECT DESCRIPTIONS
Descriptions de projects

D.1 ATLANTIC REGION
REGION DE L'ATLANTIQUE

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/85

REGION/HQ ATL
PROJECT NUMBER WQ-1

PROJECT TITLE: WATER QUALITY BRANCH MANAGEMENT OVERHEAD

NATIONAL PROGRAM NAME: Water Quality Management Data ECS CODE: 1.3

GOALS:

1) Represent IWD and/or WQB at regional and national meetings.
2) Move of WQB offices to Baig Blvd. facilities
3) Implementation of the WQB Human Resource Plan
4) A long term organization plan for WQB covering the period 1985-86 through 1988-89.Provision of secretarial and clerical services.
5) Effective management of WQB's financial resources
6) To review, all IWD research subvention proposals submitted to the regional WQB office.

RATIONALE:

To effectively manage WQB operations

DESCRIPTION

Planning and control of WQB operations

RESOURCES: ($'000)

	Total
TECH. PY PROF.	
TOTAL PY	2.15
SALARIES	76.97
O & M	65.0
CONTRACTS	-
CAPITAL	-
TOTAL $	141.97

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/85

REGION/HQ ATL
PROJECT NUMBER WQ-2

PROJECT TITLE: SECRETARIAL AND CLERICAL SERVICES

NATIONAL PROGRAM NAME: Water Quality Management Data ECS CODE: 1.3

GOALS:

Provision of secretarial and clerical services.

RATIONALE:

Provides support to WQB programs.

DESCRIPTION

RESOURCES: ($'000)

	Total
TECH. PY PROF.	
TOTAL PY	2.3
SALARIES	82.4
O & M	2.0
CONTRACTS	
CAPITAL	2.0
TOTAL $	86.4

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/85

REGION/HQ ATL
PROJECT NUMBER WQ - 3

PROJECT TITLE: INTERNATIONAL ST. CROIX RIVER

NATIONAL PROGRAM NAME: Canada/US and Interjurisdictional Water Management

ECS CODE: 1.1

GOALS:

To assist the IJC pollution advisory board in restoring an anadromous fish run to the St. Croix River and in maintaining water quality in the lower reaches of the river at an acceptable level for fish passage. This goal will be achieved by collecting and analyzing sample data from five international water quality stations, writing data summary reports and testing relevant mathematical models.

RATIONALE:

To determine water quality and provide a data base sufficient for testing and applying appropriate water quality models.

DESCRIPTION

Field measurements and collection of water samples will be made eight times a year at sites 1 to 5. Samples will be analyzed for parameter set A. In addition, a two-week survey will be conducted in September to obtain information on river response to reduced effluent loading.

RESOURCES: ($'000)

	Total
TECH.	0.2
PY PROF.	0.3
TOTAL PY	0.5
SALARIES	17.90
O & M	5.5
CONTRACTS	-
CAPITAL	5.0
TOTAL $	28.4

Map No.	NAQUADAT No.	Station Location
12	00NB01AR0013	St. Croix River at Kellyland (Can. side)
13	00NB01AR0014	St. Croix River 200 m below Woodland Mill
17	00NB01AR0020	St. Croix River at Milltown (U.S. side)
18	00NB01AR0001	St. Croix River at Milltown (Mid river)
19	00NB01AR0021	St. Croix River at Milltown (Can. side)

Parameters - Set A

Field	Temperature
	Dissolved Oxygen (meter)
	Dissolved Oxygen (Winkler)
	Specific Conductance
	pH
	Fecal Coliform
Laboratory	Specific Conductance
	pH
	Colour
	Turbidity
	Total Phosphorus
	Nitrate & Nitrite
	Ammonia N
	Total Nitrogen
	Dissolved Organic Carbon
	Dissolved Inorganic Carbon
	Extractable Iron
	Extractable Manganese
	Extractable Copper
	Extractable Lead
	Extractable Aluminum
	Extractable Mercury
	Extractable Cadmium
	Extractable Chromium
	Sodium
	Calcium
	Potassium
	Magnesium
	Chloride
	Sulfate
	Total Alkalinity
	Total Suspended Solids

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/85

REGION/HQ ATL
PROJECT NUMBER WQ-4

PROJECT TITLE: INTERPROVINCIAL BASINS

NATIONAL PROGRAM NAME: Canada/US and Interjurisdictional Water Management

ECS CODE: 1.1

GOALS:

Documentation of ambient water quality conditions of the major interprovincial rivers in Atlantic Canada.

RATIONALE:

Documentation of ambient water is necessary to provide a basis for the eventual establishment of Water Quality Objectives in these basins.

DESCRIPTION

To survey a Labrador-Quebec Interprovincial basin.

RESOURCES: ($'000)

	Total
TECH.	0.2
PY PROF.	0.2
TOTAL PY	0.4
SALARIES	14.32
O & M	4.5
CONTRACTS	-
CAPITAL	5.0
TOTAL $	23.82

Map No.	NAQUADAT No.	Station Location
20	8 stations	St. Paul River Basin, Labrador

Parameters

Labrador - Quebec	- water	- 8 samples, major ion, metals, DOC, PCB, OC
	- sediment	- 12 samples, metals, PCBs, OC, PAH
	- biota	- 75 samples, metals, PCBs, OC, PAH

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/85

REGION/HQ ATL
PROJECT NUMBER WQ-5

PROJECT TITLE: INTERNATIONAL SAINT JOHN RIVER

NATIONAL PROGRAM NAME: Canada/US and Interjurisdictional Water Management

ECS CODE: 1.1

GOALS:

To assist the Canada-U.S. committee on water quality of the Saint John River in reporting bi-annually to the governments of Canada and the U.S.A. on existing water quality in these international reaches of the river, and in recommending actions required to protect or enhance water quality in the future. This goal will be achieved by collecting and analyzing sample data from twenty-one water quality monitoring stations; by periodically conducting special data collection projects; and by participating in the writing of data interpretation and other reports.

RATIONALE:

Continual monitoring of the Saint John River water quality, will enable the WQB to recommend actions required to protect or enhance water quality in the future.

DESCRIPTION

The surveillance for compliance with established water quality objectives will continue in 1984-85 by monitoring every six weeks for listed parameters. The bacteriological surveys will be conducted during low flow in the summer and high flow in the fall. Fecal coliform determinations will be included in the regular monitoring program.

RESOURCES: ($'000)

	Total
TECH.	0.5
PY PROF.	0.5
TOTAL PY	1.0
SALARIES	35.8
O & M	5.0
CONTRACTS	-
CAPITAL	5.0
TOTAL $	45.8

Map No.	NAQUADAT NO.	STATION LOCATION
1	00NB01AD0013	St. Francis River at Picnic Site
2	00NB01AD0017	Saint John River at Caron Brook
3	00NB01AD0016	Madawaska River below Fraser Mill Outfall
4	00NB01AF0021	Green River at WSC Gauge
5	00NB01AF0023	Grand River at TCH bridge
6	00NB01AF0002	Saint John River at St. Leonard at International Bridge
7	00NB01AF0005	Saint John River, above dam at Grand Falls
8	00NB01AG0003	Limestone Stream at Four Falls
9	00NB01AG0001	Aroostook River at Tinker Dam
10	00NB01AJ0012	Big Presquile Stream at Can/U.S. Border
11	00NB01AJ0029	Meduxnekeag River at Belleville
New Stations		
14	00NB01AD0031	Background stations upstream from confluence of St. Francis and Saint John Rivers
15	00NB01AD0009	Riviere des Crocs (Little River)
16	00NB01AD0019	Baker Brook
76	00NB01AD0001	St. John River at Clair
77	00NB01AF0019	Riviere Iroquois
85	00NB01AF0015	Riviere Quisibis
86	00NB01AF0014	Seigas River
84	00NB01AD0008	Saint John River, Edmundston Int. Bridge
26	00NB01AF0038	Saint John River, downstream from Edmundston

Parameters

Field
- Temperature
- Dissolved Oxygen
- pH
- Specific Conductance
- Fecal Coliforms and Fecal Streptococcus

Laboratory
- pH
- Specific Conductance
- Colour
- Turbidity
- Alkalinity
- Calcium
- Magnesium
- Potassium
- Sodium
- Sulphate
- Chloride
- Fluoride
- Arsenic
- Cadmium - extractable
- Lead - extractable
- Copper - extractable
- Zinc - extractable
- Iron - extractable
- Mercury
- DOC
- Aluminum - extractable
- Aluminum - dissolved
- Suspendid Solids
- Phosphate - total
- Phosphate - total dissolved
- Nitrate & Nitrite
- Ammonia
- Nitrogen - total
- Humic Acid
- Zinc

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/85

REGION/HQ ATL
PROJECT NUMBER WQ-6

PROJECT TITLE: CANADA - U.S. CO-ORDINATION ON THE INTERNATIONAL SAINT JOHN RIVER

NATIONAL PROGRAM NAME: Canada/U.S. and Interjurisdictional Water Management ECS CODE: 1.1

GOALS:

To chair all ITAS meetings and to co-ordinate all ITAS activities.

RATIONALE:

Related to WQB project WQ-5.

DESCRIPTION

Co-ordination of all the various Canadian and American agencies concerned with the water quality in the international reaches of the Saint John River. This is accomplished by chairing and providing secretarial services to the International Technical Advisory Subcommittee of the Canada/U.S. Committee on Water Quality in the Saint John River.

RESOURCES: ($'000)

	Total
TECH. PY PROF.	0.3
TOTAL PY	0.3
SALARIES	10.74
O & M	2.2
CONTRACTS	-
CAPITAL	-
TOTAL $	12.94

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/85

REGION/HQ ATL
PROJECT NUMBER WQ-7

PROJECT TITLE: PROMOTION OF WATER QUALITY OBJECTIVES

NATIONAL PROGRAM NAME: Canada/US and Interjurisdictional Water Management

ECS CODE: 1.1

GOALS:

To participate in the IWD initiative directed at increasing the Directorate's horizontal influence with Parks Canada, DINA and DFO by promoting the use of WQO'S.

RATIONALE:

Development of Water Quality Objectives in the Atlantic Region.

DESCRIPTION

The long term objective of this project is to promote the use of Water Quality Objectives as a water quality management tool to all water resource managers and to provide assistance and direction in the development of Water Quality Objectives.

RESOURCES: ($'000)

	Total
TECH.	0.1
PY PROF.	0.2
TOTAL PY	0.3
SALARIES	10.74
O & M	1.5
CONTRACTS	-
CAPITAL	-
TOTAL $	12.24

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/85

REGION/HQ ATL
PROJECT NUMBER WQ-8

PROJECT TITLE: NEGOTIATION OF FEDERAL/PROVINCIAL WATER QUALITY MONITORING AGREEMENTS

NATIONAL PROGRAM NAME: Water Quality Management Data ECS CODE: 1.3

GOALS:

1) To complete the negotiation of the Canada/Newfoundland Water Quality Monitoring Agreement.

2) To complete the negotiation of the Canada/New Brunswick Water Quality Monitoring Agreement.

3) To initiate the negotiation of a Federal-Provincial Water Quality Monitoring Agreement with Nova Scotia.

RATIONALE:

In order to maximize both Federal and Provincial resources allocated to Water Quality studies in the Atlantic Provinces, water quality agreements will be negotiated which will eliminate duplication and enhance both the quality and quantity of the data collected, analyzed and interpreted.

DESCRIPTION

The long term objective of this project is to negotiate a Federal/Provincial Water Quality Monitoring Agreement with each province in the Atlantic Region by 1988.

RESOURCES: ($'000)

	Total
TECH. PY PROF.	0.4
TOTAL PY	0.4
SALARIES	14.32
O & M	2.3
CONTRACTS	-
CAPITAL	-
TOTAL $	16.62

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/85

REGION/HQ ATL
PROJECT NUMBER WQ-9

PROJECT TITLE: OVERHEAD SERVICES EDP

NATIONAL PROGRAM NAME: Water Quality Management Data ECS CODE: 1.3

GOALS:

1. To provide an electronic support service for branch projects.
2. To provide data processing services for branch projects.

RATIONALE:

Regional managers require data in a format which can be readily managed, manipulated and interpreted. To this end the data will be digitally stored and software and hardware provided for interpretive officers to work with.

DESCRIPTION

Provide an electronic support and data processing service for branch projects.

RESOURCES: ($'000)

	Total
TECH. PY PROF.	1.6 -
TOTAL PY	1.6
SALARIES	57.29
O & M	0.7
CONTRACTS	-
CAPITAL	17.0
TOTAL $	74.99

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/85

REGION/HQ ATL
PROJECT NUMBER WQ-10

PROJECT TITLE: ELECTRONIC DATA PROCESSING

NATIONAL PROGRAM NAME: Water Quality Management Data ECS CODE: 1.3

GOALS:

A regional EDP support service for various directorate projects.

RATIONALE:

Regional managers require data in a format which can be readily managed, manipulated and interpreted. Data will be digitally stored and appropriate hardware and software will be maintained and/or developed.

DESCRIPTION

Provision of a regional EDP support service for various Directorate Projects.

RESOURCES: ($'000)

	Total
TECH.	0.5
PY PROF.	1.0
TOTAL PY	1.5
SALARIES	53.71
O & M	2.5
CONTRACTS	-
CAPITAL	-
TOTAL $	56.21

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/85

REGION/HQ ATL
PROJECT NUMBER WQ-11

PROJECT TITLE: SHUBENACADIE BASIN STUDY

NATIONAL PROGRAM NAME: Water Management Research

ECS CODE: 1.5

GOALS:

To complete a report describing the sources of arsenic and mercury contamination in the Shubenacadie Lakes system and the potential for producing harm to the ecosystem.

RATIONALE:

The project completes the work recommended by an earlier Canada-Nova Scotia Canada Waters Act agreement to re-survey the lakes after five years.

DESCRIPTION

Complete reports on 1983-84 Shubenacadie Basin Study.

RESOURCES: ($'000)

	Total
TECH. PY PROF.	0.1
TOTAL PY	0.1
SALARIES	3.58
O & M	0.7
CONTRACTS	-
CAPITAL	-
TOTAL $	4.28

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/85

REGION/HQ ATL
PROJECT NUMBER WQ-12

PROJECT TITLE: WATERFORD RIVER BASIN STUDY

NATIONAL PROGRAM NAME: Canada/US and Interjurisdictional Water Management

ECS CODE: 1.1

GOALS:

1. To analyse water samples from 9 surface sites and 16 wells.
2. To produce a surface water quality interpretive report and provide data for a groundwater hydrology report and a storm water management model.

RATIONALE:

Through a work-sharing project with the province of Newfoundland and Labrador, sampling of surface water, storm water and ground water in the Waterford River Basin will provide necessary data for selection of a suitable predictive water quality model.

DESCRIPTION

Analyze waters from 9 surface water sites, 8 deep wells and 8 shallow wells, to determine hydrologic and runoff characteristics of waters in the joint Federal/Provincial study basin.

RESOURCES: ($'000)

	Total
TECH. PY PROF.	0.2
TOTAL PY	0.2
SALARIES	7.16
O & M	0.8
CONTRACTS	-
CAPITAL	-
TOTAL $	7.96

Map No.	NAQUADAT No.	Station Location
		Surface Water Sampling Sites
51	00NF02ZM0009	Waterford R. @ Kilbride
52	00NF02ZM0008	South Bk. trib. from Deadman's Pond
53	00NF02ZM0007	South Bk @ Heavy Tree Rd.
54	00NF02ZM0006	Agricultrual Stn. Brook
55	00NF02ZM0004	Waterford R. @ Commonwealth Avenue
56	00NF02ZM0003	Waterford R. @ Donovans
57	00NF02ZM0012	Waterford R. @ Dunn's Rd.
58	00NF02ZM0001	South Bk. @ Ruby Line Rd.
59	21NF02ZM0001	Neighbourhood II, New Town Storm Sewer Outfall
Site		**Deep and Shallow Wells**
A	10NF02ZM0004	Well "A" Deep
A	10NF02ZM0005	Well "A" Shallow
B	10NF02ZM0006	Well "B" Deep
B	10NF02ZM0007	Well "B" Shallow
C	10NF02ZM0008	Well "C" Deep
C	10NF02ZM0009	Well "C" Shallow
D	10NF02ZM0010	Well "D" Deep
D	10NF02ZM0011	Well "D" Shallow
E	10NF02ZM0012	Well "E" Deep
E	10NF02ZM0013	Well "E" Shallow
F	10NF02ZM0014	Well "F" Deep
F	10NF02ZM0015	Well "F" Shallow
G	10NF02ZM0016	Well "G" Deep
G	10NE02ZM0017	Well "G" Shallow
H	10NF02ZM0018	Well "H" Deep
H	10NF02ZM0019	Well "H" Shallow

Parameters

(i)

Field	Frequency
Temperature	Monthly
Specific Conductance	Monthly
DO	Monthly
pH	Monthly
Laboratory	
Temfperature	Monthly
pH	Monthly
Specific Conductance	Monthly
Filterable Residue	Monthly
Colour	Monthly
Turbidity	MOnthly
Sodium	Monthly
Calcium	Monthly
Potassium	Monthly
Chloride	Monthly
Sulphate	Monthly
Total Organic Carbon	Monthly
Alkalinity	Monthly
Toıal Phosphorus	Monthly
Silica	Monthly
Nitrate, Nitrite	Monthly
Ammonia	Monthly
Total Nitrogen	Monthly
Manganese	Monthly
Iron	Monthly
Copper	Monthly
Lead	Monthly
Zinc	Monthly
Arsenic	Semi-Annually
Nickel	Semi-Annually
Cadmium	Semi-Annually

(ii)

Field	Frequency
Temperature	Quarterly
Specific Conductance	Quarterly
pH	Quarterly
Depth	Quarterly
Laboratory	
Temperature	Quarterly
pH	Quarterly
Specific Conductance	Quarterly
Filterable Residue	Quarterly
Colour	Quarterly
Turbidity	Quarterly
Sodium	Quarterly
Potassium	Quarterly
Calcium	Quarterly
Magnesium	Quarterly
Chloride	Quarterly
Sulphate	Quarterly
Alkalinity	Quarterly
Iron	Quarterly
Manganese	Quarterly
Copper	Quarterly
Lead	Quarterly
Zinc	Quarterly
Arsenic	Quarterly
Nitrate, Nitrite	Quarterly
Ammonia	Quarterly
Total Nitrogen	Quarterly
Total Phosphorus	Quarterly
Total Organic Carbon	Quarterly

(iii)

Laboratory	Precipitation Events over 50mm.
Total Organic Carbon	Iron
Nitrate, Nitrite	Copper
Ammonia	Lead
Total Nitrogen	Zinc
Manganese	

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/85

REGION/HQ ATL
PROJECT NUMBER WQ-13

PROJECT TITLE: REGIONAL OVERVIEW NETWORK

NATIONAL PROGRAM NAME: Water Quality Management Data ECS CODE: 1.3

GOALS:

To co-ordinate the collection of bi-monthly ambient water quality data by the water resources branch at 27 stations in Atlantic Canada comprising the regional overview network.

RATIONALE:

Collection of water samples from 27 strategically located stations will provide an overview of water quality in the Atlantic Region.

DESCRIPTION

This project will consist of collecting water samples every two months from 27 geographically strategic locations in the Atlantic Region and to have these samples analyzed for major ions, trace metals, nutrients plus any parameters of special concern during the sampling period. All samples will be collected by WRB technicians while co-ordination and logistic support will be handled by the WQB Supplies in the form of sampling kits will be shipped from Moncton to the WRB district offices on the last day of the month preceeding the month samples are to be collected. One advanced 3-day training session for the WRB Hydrometric Technicians will be given in the fall in order to provide additional insight into the parameters measured and sampling methodology.

RESOURCES: ($'000)

	Total
TECH. PY PROF.	0.3
TOTAL PY	0.3
SALARIES	10.74
O & M	1.0
CONTRACTS	-
CAPITAL	-
TOTAL $	11.74

Map No.	NAQUADAT NO.	Station Location
7	01NB01AF0005	St. John River @ Grand Falls Headpond approx. 150 m. above dam.
11	00NB01AJ0029	Meduxnekeag River @ Bridge above junction with Mill Stream, Belleville, N.B.
28	00NB01AP0002	Kennebecasis River @ Hwy 880 Bridge, Apohaqui, N.B.
18	00NB01AR0001	St. Croix River @ International Bridge, Milltown, N.B.
29	00NB01BJ0056	Restigouche River @ Rafting Ground Brook, N.B.
30	00NB01BK0026	Nepisiquit River @ Hwy 360, N.B.
31	00NB01BØ0001	S.W. Miramichi River @ Bridge, Blackville, N.B.
32	00NB02BQ0044	N.W. Miramichi River @ Hwy 430 Bridge, Wayerton, N.B.
33	00NB01BU0031	Petitcodiac River @ TCH Bridge, Petitcodiac, N.B.
23	00NS01DC0001	Annapolis River @ Bridge, Wilmot Station, N.S.
34	00NS01DG0008	Shubenacadie River @ Bridge, Elmsdale, N.S.
35	00NS01DN0001	Wallace River @ TCH Bridge, Wentworth Centre, N.S.
36	00NS01EE0001	Medway River @ Bridge, Charleston, N.S.
37	00NS01EØ0001	St. Mary's River @ Hwy 7 Bridge, Stillwater, N.S.
38	00NS01FB0001	N.E. Margaree River @ Bridge, Margaree Valley, N.S.
39	00NS01FJ0001	Salmon River @ Salmon River Bridge, N.S.
40	00PE01CA0001	Carruthers Brook @ Bloomfield Park north of St. Anthony, PEI

Map No.	NAQUADAT No.	Station Location
41	00PE01CB0001	Dunk River @ Wall Road, PEI
42	00PE01CB0003	Morell River @ Bridge west of Bangor, PEI
43	00NF02YC0001	Torrent River @ Bristol's Pool, Nfld.
44	00NF02YJ0001	Harry's River @ Black Duck, Nfld.
45	00NF02ZH0001	Pipers Hole River @ Mothers Brook, Nfld.
46	00NF02ZK0001	Rocky River @ Hwy 6 Bridge, Colinet, Nfld.
47	00NF02YØ0001	Exploits River @ Price Mill Bridge, Grand Falls, Nfld.
48	00NF02YM0001	Indian River near Springdale, Nfld.
49	00NF03QC0001	Eagle River above Eagle Falls, Lab.
50	00NF03ØE0001	Churchill River @ Muskrat Falls, Lab.

Parameters

Field

Temperature

pH
DO

Laboratory

Temperature
pH
Turbidity
Alkalinity
Specfic Conductance
Colour
Calcium
Magnesium
Potassium
Sodium
Floride
Chloride
Sulfate

Phosphorus (Total)
Copper
Mercury
Zinc
Cadmium
Lead
Aluminum
Iron
Manganese
Dissolved Organic Carbon
Dissolved Inorganic Carbon
Nitrate & Nitrite
Ammonia
Nitrogen (Total)

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/85

REGION/HQ ATL
PROJECT NUMBER WQ-14

PROJECT TITLE: ANALYTICAL LABORATORY OPERATIONS

NATIONAL PROGRAM NAME: Water Quality Management Data ECS CODE: 1.3

GOALS:

Timely and accurate analysis of all water quality samples collected in the Atlantic Region under IWD national programs.

RATIONALE:

In support of WQB projects.

DESCRIPTION

Provide timely and accurate analysis of all samples collected in the Region under IWD Programs.

RESOURCES: ($'000)

	Total
TECH. PY PROF.	
TOTAL PY	9.8
SALARIES	350.90
O & M	70.5
CONTRACTS	
CAPITAL	39.0
TOTAL $	460.40

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/85

REGION/HQ ATL
PROJECT NUMBER WQ-15

PROJECT TITLE: QUALITY ASSURANCE IN SUPPORT OF WATER QUALITY PROGRAMS

NATIONAL PROGRAM NAME: Water Quality Management Data ECS CODE: 1.3

GOALS:

a) Follow laboratory quality assurance procedures to ensure generation of accurate and precise data on all water quality samples.
b) To establish a set of guidelines for the field activities in all WQB programs to ensure adequate quality control or assurance. This will allow easier interpretation of water quality data.

RATIONALE:

In support of other WQB projects.

DESCRIPTION

a) Continue the use of laboratory quality control procedures to provide accurate and precise analysis of samples.
b) Establish a Q.C. protocol for all field programs such that standardized collection, preservation and quality assurance techniques will be employed.

RESOURCES: ($'000)

	Total
TECH.	1.0
PY PROF.	0.4
TOTAL PY	1.4
SALARIES	50.13
O & M	-
CONTRACTS	-
CAPITAL	-
TOTAL $	50.13

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/85

REGION/HQ ATL
PROJECT NUMBER WQ-16

PROJECT TITLE: SEDIMENT LABORATORY IN SUPPORT OF WATER RESOURCES BRANCH

NATIONAL PROGRAM NAME: Water Quality Management Data ECS CODE: 1.3

GOALS:

On a timely basis, analyse for sediments on samples collected by the WRB from 15 stations in the region.

RATIONALE:

In support of Water Resources Branch.

DESCRIPTION

Provision of sediment determinations in water samples for Water Resources Branch.

RESOURCES: ($'000)

	Total
TECH. PY PROF.	
TOTAL PY	0.5
SALARIES	17.90
O & M	0.5
CONTRACTS	-
CAPITAL	-
TOTAL $	18.4

SITE NO.	STATION NO.	STATION LOCATION
1	01AP004	Kennebecasis at Apohaqui
2		Grand River
3		Dermis Stream
4	01DC005	Annapolis River at Wilmot
5	01DL001	Kelley River at Eight Mile Ford
6	01DP004	Middle River at Rocklin
7		Pembroke
8	01CE003	Brudenell River near Brudenell
9	01CB006	Emerald Bk. near Wall River
10	01CB005	North Bank near Wall River
11	01CB004	Wilmot River near Wilmot Valley
12	02ZM008	Waterford River at Kilbride
13	02YJ001	Harry's River below Hwy Bridge Highlands
14	02ZM006	Northwest Pond River at Northeast Pond
15		Coal Branch River at Beersville

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/85

REGION/HQ ATL
PROJECT NUMBER WQ-17

PROJECT TITLE: ORGANICS IN ATMOSPHERIC PRECIPITATION

NATIONAL PROGRAM NAME: Water Quality Management Data ECS CODE: 1.3

GOALS:

Data on the quantity and type of atmospheric contributions of selected organic compounds to the Inland Waters of Atlantic Canada.

RATIONALE:

Long distance transport through the atmosphere is an important pathway by which contaminants may disperse throughout the environment. Quantifying trace organic contaminants in precipitation may explain the widespread distribution of some anthropogenic chemicals in areas far removed from industrialized centres.

DESCRIPTION

a) Collect wet only precipitation samples from sites in Kejimkujik National Park (N.S.) and Ellerslie, P.E.I. and analyse all samples for PAH'S, OC's, PCB s and Chlorobenzenes. (48 samples).
b) Prepare a 1983 data summary report by May 31, 1984.

RESOURCES: ($'000)

	Total
TECH. PY PROF.	
TOTAL PY	0.1
SALARIES	3.58
O & M	1.0
CONTRACTS	-
CAPITAL	-
TOTAL $	4.58

MAP NO.	NAQUADAT NO.	STATION LOCATION
78	33NS01ED0004	Kejimkujik National Park, N.S.
79	33PE01CA0001	Ellerslie Biological Station P.E.I.

Parameters

PAH's, OCS, PCBs and Chlorobenzenes

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/85

REGION/HQ ATL
PROJECT NUMBER WQ-18

PROJECT TITLE: CONDUCTING TOXIC CHEMICAL MEASUREMENT STUDIES IN THE ATLANTIC REGION

NATIONAL PROGRAM NAME: Toxic Chemicals

ECS CODE: 4.1

GOALS:

Radioisotope background data for use by national WQB programs and pesticide drift data for use by regional pesticide committees.

RATIONALE:

To measure and characterize toxic chemicals in the Region and to identify background levels and areas of elevated concentrations for management decisions.

DESCRIPTION

The studies will measure selected radioisotope levels at 5 sites; pesticide levels in water, sediments and biota from several locations within Annapolis and Cornwallis River Basins; heavy metal levels in water and sediments from sites within N.W. Miramichi River system and Exploits River system.

RESOURCES: ($'000)

	Total
TECH. PY PROF.	1.1
TOTAL PY	1.1
SALARIES	39.39
O & M	6.8
CONTRACTS	-
CAPITAL	4.0
TOTAL $	50.19

MAP NO.	NAQUADAT NO.	STATION LOCATION
		National Radioisotope Monitoring Program
21	02NB01AQ0001	Moose Creek at Hwy 790 Bridge near Chance Harbour, St. John County, N.B.
22	02NB01BU0002	Petitcodiac River at Gunningsville Bridge, Moncton, N.B.
23	00NS01DC0001	Annapolis River at Bridge, Wilmot, N.S.
24	00NS1FJ00020	McAskill Brook at Hwy Bridge on road to Birch Grove near Glace Bay
25	00NF02NG0004	Ranger Bight Brook outlet at Ranger Bight, 2 km West of Makkovik, Labrador

Parameters

i) Aminocarb, carbaryl
ii) OC's, PCBs,
iii) Major ions, DOC, PCBs, OC's, Azinphosmethyl, 2-4D, 2,4,5-T
iv) Hg, Cd, As, Cu, Fe, Mn, Major Ions, DOC

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/85

REGION/HQ ATL
PROJECT NUMBER WQ-19

PROJECT TITLE: LRTAP RIVER MONITORING AND BASIN STUDY

NATIONAL PROGRAM NAME: Long Range Transport of Airborne Pollutants

ECS CODE: 4.2

GOALS:

Water quality data for use in determining long term LRTAP trends in Aquatic systems.

To study the chemistry and hydrology of study basins in the Kemimkujik National Park region and to try to relate them to acidification dose response models.

RATIONALE:

Part of the Canada-USA Memorandum of Intent on Acid Precipitation calls for long-term trend monitoring.

DESCRIPTION

To sample 26 rivers in Atlantic Canada and sample aquatic quality in a study basin in southwest Nova Scotia through stream and snow sampling.

RESOURCES: ($'000)

	Total
TECH.	0.3
PY PROF.	0.8
TOTAL PY	1.1
SALARIES	39.39
O & M	15.5
CONTRACTS	-
CAPITAL	-
TOTAL $	54.89

(a) Sites Sampled

(i) 2 basins in Kejimkujik area weekly
(ii) 26 rivers in region, 12 times a year
(iii) Weekly snow samples from Keji area, Beaverskin, CAPMON and Mersey

Map. No.	NAQUADAT No.	Station Location
		Nova Scotia
36	00NS01EE0001	Medway River
62	00NS01EC0001	Roseway River
63	00NS01EA0001	Tusket River
64	00NS01EN0002	Liscomb River
65	00NS01EF0002	Lahave River
37	00NS01EØ0001	St. Mary's River
66	00NS01DE0001	Avon River at Power Dam
67	00NS01DL0009	Kelly River
35	00NS01DN0001	Wallace River
68	00NS01DA0001	Meteghan River
69	00NS01ER0002	Clam Harbour River
60	00NS01ED0005	Mersey River
		New Brunnswick
70	00NB01AØ0001	Lepreau River
71	00NB01BV0015	Pointe Wolfe River
72	00NB01AN0003	Salmon River at Gaspereaux Forks
73	00NB01AM0001	North Branch Oromocto River
		Prince Edward Island
41	00PE01CB0001	Dunk River
40	00PE01CA0001	Mill River
		Newfoundland and Labrador
74	00NF02YZ0001	Isle aux Morts River
43	00NF02YC0001	Torrent River @ Bristol's Pool
44	00NF02YJ0001	Harry's River @ Black Duck
45	00NF02ZH0001	Piper's Hole River @ Mother's Brook
46	00NF92ZK0001	Rocky River @ Colinet
47	00NF02YØ0001	Exploits River @ Price Mill
48	00NF02YM0001	Indian Brook @ Springdale
75	00NF02ZD0003	Grey River @ WSC Gauge

(b) Parameters

Major ions, including I.C., SO_4
Nutrients, nitrogens, carbons and phosphorus
Metals, Pb, Zn, Cd, Fe, Mn, Al (species)

26 rivers - major ions, including SO_4 (I.C), metals, DOC

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/85

REGION/HQ ATL
PROJECT NUMBER WQ-20

PROJECT TITLE: LRTAP LAKE AND STREAM MONITORING

NATIONAL PROGRAM NAME: Long Range Transport of Airborne Pollutants

ECS CODE: 4.2

GOALS:

Water quality data for use in determining long term LRTAP trends in lakes.

To study the chemistry and hydrology of study basins in the Kejimkujik area and to relate these to acidifcation dose/response models.

RATIONALE:

Part of the Canada-U.S.A. Memorandum of Intent on Acid Precipitation calls for long term trend monitoring and part calls for development and calibration of acid dose/response models.

DESCRIPTION

To sample 71 lakes in Atlantic Canada to detect trends in acid precipitation parameters and to study the aquatic quality of precipitation parameters and to study the aquatic quality of streams in support of acid deposition dose/response modelling.

RESOURCES: ($'000)

	Total
TECH. PY PROF.	
TOTAL PY	0.2
SALARIES	7.16
O & M	-
CONTRACTS	-
CAPITAL	-
TOTAL $	7.16

Map. No.	NAQUADAT No.	Station Location
		Acid Precipitation Sampling in Newfoundland
87	01NF02YH0001	Wigwam Pd
88	01NF02YK0006	Center of Glover Island
89	01NF02YL0001	East of Adies Pd
90	01NF02YM0001	Near Noble Pd
91	01NF02YM0003	North of Upper Indian Pd
92	01NF02YM0006	Near Middle Arm
93	01NF02YM0007	N.W. of Burlington
94	01NF02YN0008	Sandy Lake S.W. of Buchans
95	01NF02YØ0007	Gull Lake
96	01NF02YØ0009	Tally Pond
97	01NF02YQ0001	Bellman's Pd
98	01NF02YR0005	Near Ocean Pd and T.M. Pd
99	01NF02YS0003	Rattle Pd
100	01NF02YS0005	Shallow Pd #3
101	01NF02YS0009	Ochre Hill Pd
102	01NF02YS0010	Chatman Pd W.
103	01NF02YS0016	Nameless Pd #2
104	01NF02YS0021	Bog Pd
105	01NF02YS0029	Long Waters S.
106	01NF02YS0045	Jay Pond
107	01NF02YS0048	Mosses Cove Pd
108	01NF02ZB0001	Big Pond
109	01NF02ZC0002	Near Knowle's Bk
110	01NF02ZC0003	Stephenson's Pd
111	01NF02ZD0001	Near Dolland Bk
112	01NF02ZD0002	Pd W. of Wolf Lake
113	01NF02ZF0003	Pd N. of Gisbourne L.
114	01NF02ZF0004	Hungry Grove Pd

Map No.	NAQUADAT No.	Station Location
		Acid Precipitation Lake Sampling in Southwestern Nova Scotia
115	01NS01ED0001	Back Lake in middle
116	01NS01ED0002	Big Dam West Lake in middle
117	01NS01ED0003	Big Dam East Lake in middle
118	01NS01ED0004	Mountain Lake in centre of north part
119	01NS01ED0005	Peskowesk Lake N.W. of tip of Isle de l'Orignal
120	01NS01ED0006	Grafton Lake in centre
121	01NS01ED0007	Kejumkujik Lake 200 m. S.W. of Peale Island
122	01NS01ED0008	High Lake in middle
123	01NS01ED0010	Pebbleloggitch Lake in middle
124	01NS01ED0011	Coblielle Lake in middle
125	01NS01ED0013	Ben Lake in middle
126	01NS01ED0014	Big Red Lake
127	01NS01ED0015	Mud Lake in middle
128	01NS01ED0016	Snake Lake in middle
129	01NS01ED0017	Liberty Lake in middle
130	01NS01ED0019	Frozen Ocean Lake in middle
131	01NS01ED0020	Central Lake
132	01NS01ED0021	Little Red Lake at S.E. side
133	01NS01ED0022	Poplar Lake in middle
134	01NS01ED0025	Luxion Lake in middle
135	01NS01ED0027	Beaverskin Lake in middle of west part
136	01NS01ED0028	McGinty Lake in middle
137	01NS01ED0029	Peskawa Lake in middle
138	01NS01ED0030	Upper Silver Lake in middle of South basin
139	01NS01ED0043	Mount Tom Lake - Kej. Nat'l Park
140	01NS01ED0047	George Lake - Kej. Nat'l Park
142	01NS01EA0010	Trefry Lake 300 m N.N.E. of outlet
143	01NS01EA0011	Allens Lake
144	01NS01EA0013	Milton Lake just North of centre
145	01NS01EA0014	Churchill Lake about 300 m. S.W. of inlet
146	01NS01EA0016	Darling Lake 300m S. of inlet from Coggins Lake
147	01NS01EA0002	Lake George, 15 km N.E. of Yarmouth (water supply)
148	01NS01EA0004	Jesse Lake, Yarmouth Co.
149	01NS01EA0005	Doctor Lake 300 m S.W. of large island
150	01NS01EA0009	Brenton Lake near centre
151	01NS01DA0002	Tedford Lake, Digby Co.
152	01NS01DA0003	Killam Lake 250 m. N.W. of inlet from Lake George
153	01NS01DA0004	Cedar Lake 100 mg. S.W. of large point at N. end
154	01NS01DA0005	Lower Corning Lake 550 m S.E. of Corning Brook
155	01NS01DA0006	Pierce Lake 175 m. W. of N.E. Shore
156	01NS01DA0007	Coggins Lake about 300 m. N. of Southern Shore
157	01NS01EA0019	Snarl Lake 440 m. N.E. of N.W. outlet
158	01NS01EA0020	Bird Lake about 200 m. E. of N.W. Shore

Parameters

Major ions including I.C., SO_4
Nutrients, N, C, P
Metals, Pb, Zn, Cd, Fe, Mn, Al (species)

FIGURE 1 WATER QUALITY BRANCH MONITORING STATIONS 1984-85
STATIONS DE SURVEILLANCE DE LA DIRECTION DE LA QUALITÉ DES EAUX 1984-85

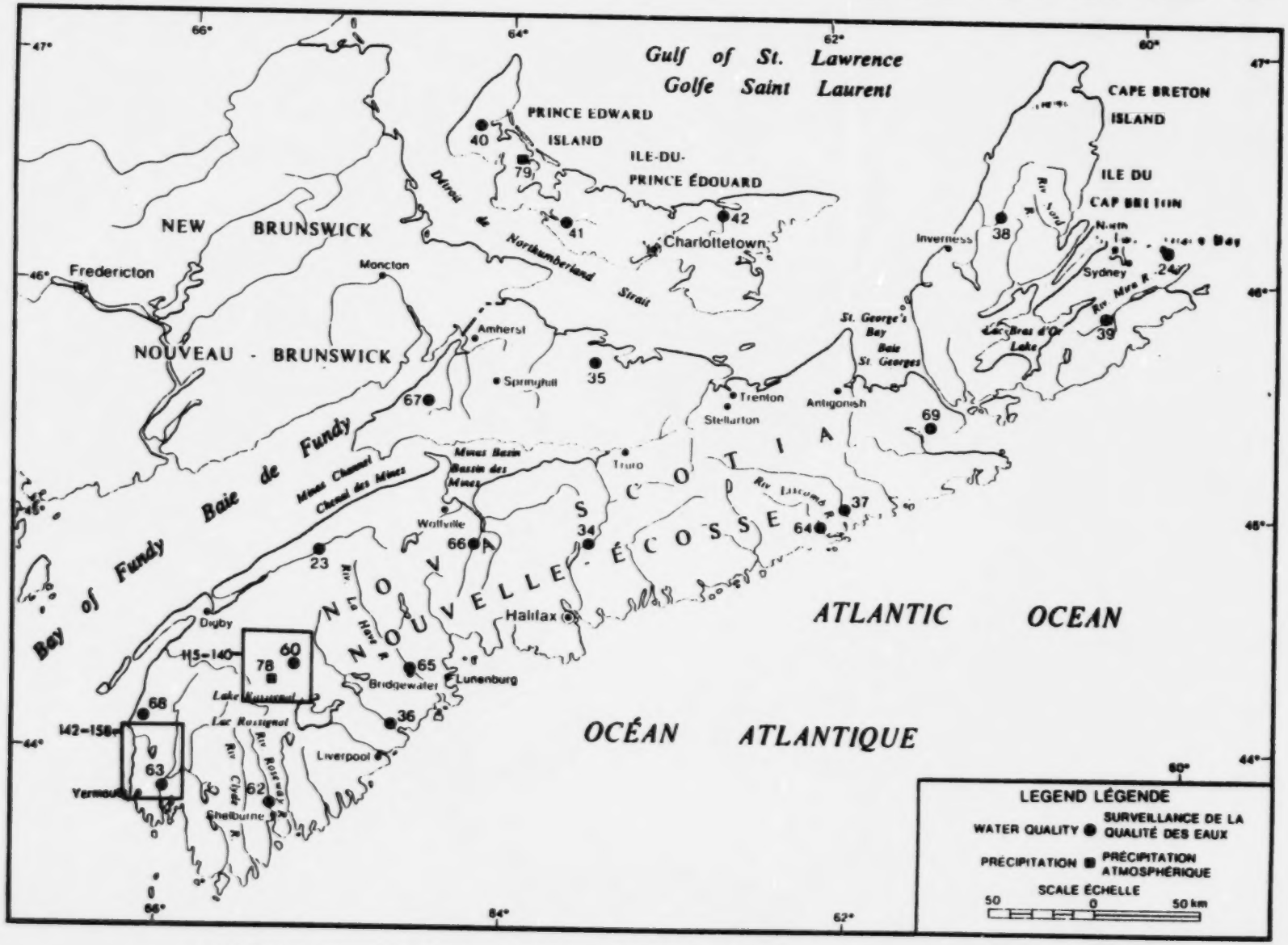


FIGURE 2 WATER QUALITY BRANCH MONITORING STATIONS 1984-85
STATIONS DE SURVEILLANCE DE LA DIRECTION DE LA QUALITÉ DES EAUX 1984-85

FIGURE 3 WATER QUALITY BRANCH MONITORING STATIONS 1983-84
STATIONS DE SURVEILLANCE DE LA DIRECTION DE LA QUALITÉ DES EAUX 1983-84

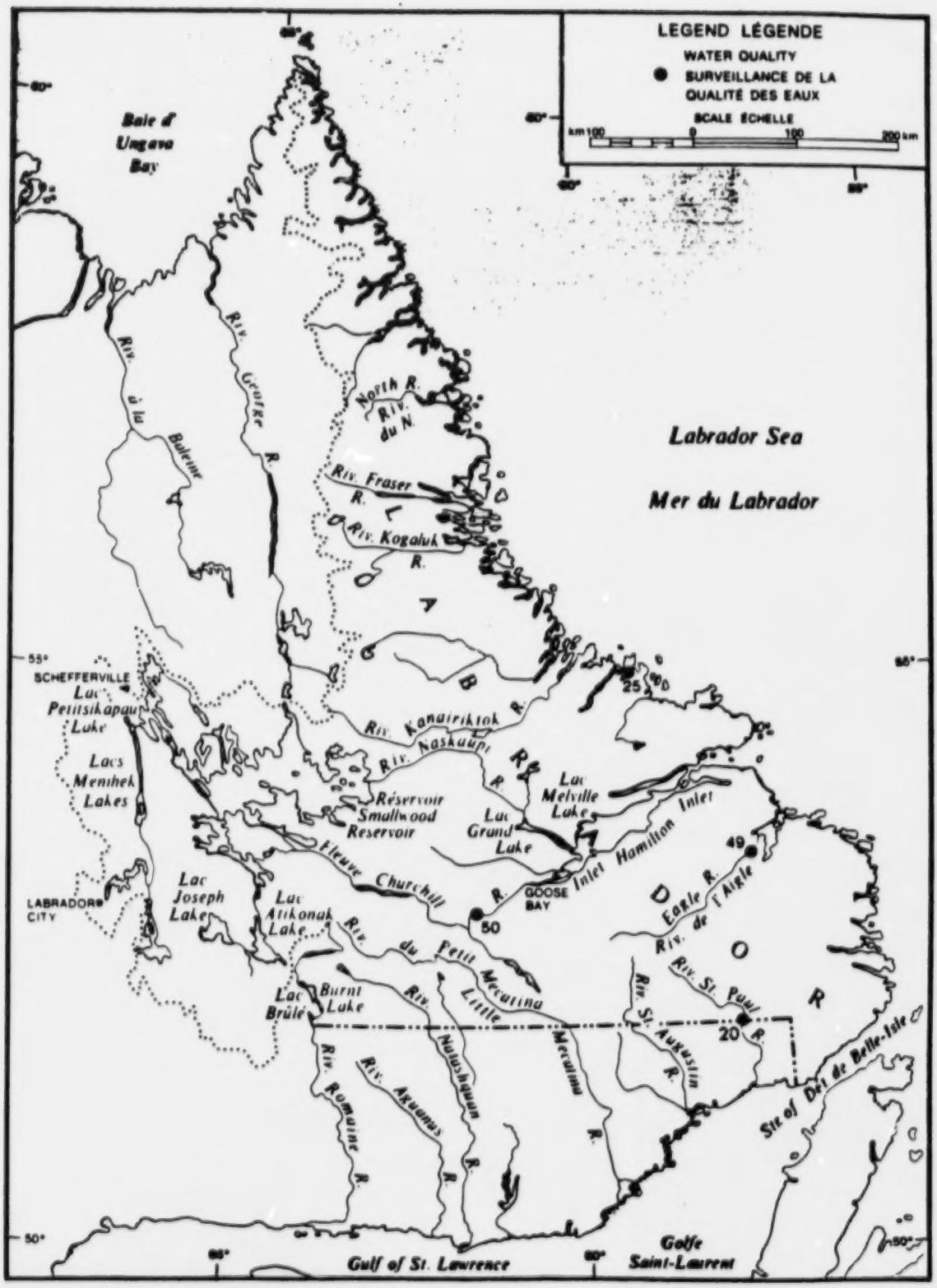


FIGURE 4 WATER QUALITY BRANCH MONITORING STATIONS 1984-85
STATIONS DE SURVEILLANCE DE LA DIRECTION DE LA QUALITÉ DES EAUX 1984-85

D.2 REGION DU QUEBEC
QUEBEC REGION

DESCRIPTION DU PROJET
DIRECTION DE LA QUALITY DES EAUX
1984/85

REGION Québec
NUMERO
DU PROJET TF-0804

TITRE DU PROJET: Réseau de la qualité de l'eau, Fleuve St-Laurent

NOM DU PROGRAMME NATIONAL: Gestion des données sur la qualité des eaux

CODE DU SCE 1.3

BUTS:

Dans la partie fluviale du fleuve Saint-Laurent, recueillir des données de la qualité de l'eau, les analyser et les rendre adéquates pour fins d'utilisation et de publications, les interpréter, identifier et décrire les problèmes de pollution de l'eau, produire des rapports.

FONDEMENT:

Fournir des données précises et complètes sur les eaux intérieures du Canada.

DESCRIPTION DU PROJET:

Echantillonner et analyser (entrer les résultats dans NAQUADAT): 6 fois 26 stations (réseau de base); 1 fois 13 stations (projet "Emissaire"). 6 fois 9 stations (projet "mercure Lac Saint-Louis"). Publier un rapport interprétatif sur le réseau 1977-81 et un rapport de données historiques.

RESOURCES: ($'000)

	Sous-Total
A.-P. TECHN.	2,7
PROF.	1,0
TOTAL A.-P.	3,7
TRAITEMENTS	119,0
FONCTIONNEMENT	57,3
CONTRATS	--
INVESTISSEMENT	18,6
TOTAL$	194,9

NUMERO DE CARTE	NO. NAQUADAT	DESCRIPTION	TOURNEES	PARAMETRES
1	05QU02LB9001	Rivière des Outaouais sur le barrage de Carillon	6X	A,B
2	00QU02ØA9002	Rivière des Outaouais canal Ste-Anne à Ste-Anne de Bellevue sous la route #20	6X	A,B
3	00QU02MC9007	Fleuve St-Laurent canal de Beauharnois à Valleyfield pont de la route #132 au centre de la voie navigable (00QU02MC0136)	6X	A,B,E
4	01QU02ØA9008	Fleuve St-Laurent Lac St-Louis à 30 mètres de la pointe à Charlebois	6X	A
5	01QU02ØA9009	Fleuve St-Laurent Lac St-Louis à 150 mètres de la pointe à Fourneau	6X	A
6	01QU02ØA9010	Fleuve St-Laurent Lac St-Louis entre la pointe Mercier et l'Ile Mercier vis à vis le chenal pour petites embarcations	6X	A
7	00QU02ØA9013	Fleuve St-Laurent entre Grande Ile et la rive sud (près de Boucherville) à 600 mètres de l'Ile sous la ligne de trans-mission	11X	A,B,C,D,E
8	00QU02ØA9014	Fleuve St-Laurent l'Ile au veau et Pointe-aux-Trembles sous la ligne de tranmission à 400 mètres de l'Ile	11X	A,B,C,D,E
9	00QU02ØJ9015	Fleuve St-Laurent 300 mètres en aval de l'Ile Evers (près de Varennes) entre l'Ile aux Cerfeuils et l'Ile des Lauriers	11X	A,B,C,D,E
10	00QU02ØB9016	Fleuve St-Laurent à 25 mètres du quai de Lanoraie	11X	A'B,C,D,E
11	00QU02ØJ9017	Fleuve St-Laurent à 50 mètres de la rive sud en face de Lanoraie	11X	A,B,C,D,E
12	00QU02NG9019	Fleuve St-Laurent sous le pont Laviolette Lanoraie à Trois-Rivières côté nord entre le deuxième et le troisième pilier	6X	A,B

NUMERO DE CARTE	NO. NAQUADAT	DESCRIPTION	TOURNEES	PARAMETRES
13	00QU02ØD9020	Fleuve St-Laurent sous le pont Laviolette à Trois-Rivières côté sud entre le deuxiéme et le troisième pilier	6X	A,B
14	00QU02ØD9026	Fleuve St-Laurent au centre du pont Laviolette à Trois-Rivières voie navigable	6X	A,B
15	00QU02ØJ9027	Fleuve St-Laurent au centre de la voie navigable en face de Lanoraie	11X	A,B,C,D,E
16	00QU02ØA9028	Fleuve St-Laurent prise d'eau de l'usine de filtration de Montréal Charles J. Desbaillet	6X	A,B
17	00QU02MC9029	Fleuve St-Laurent au centre du barrage de Beauharnois sur la route #132 aval du barage sur le deuxième pont (00QU02MC0139)	6X	A
18	00QU02ØA9031	Fleuve St. Laurent entre l'Ile au Veau et Grand Ile (voie navigable) au entre de la voie navigable sous la ligne de transmission	11X	A,B,C,D,E
19	01QU02ØA9032	Fleuve St-Laurent Lac St-Louis chenal Bergeron en aval de l'Ile du Diable	6X	A
20	00QU02MC9033	Rivière St-Louis sur le pont de la route #132 à Beauharnois (00QU02MC3002)	6X	A
21	01QU02MC9034	Fleuve St-Laurent Lac St-Louis à 300 mètres en amont de la Grande Ile	6X	A
22	01QU02ØA9035	Fleuve St-Laurent Lac St-Louis à 600 mètres au large de l'Ile Tambault	6X	A
23	01QU02ØA9036	Fleuve St-Laurent Lac St-Louis un peu en aval du ruisseau St-Jean environ 300 mètres de l'embouchure	6X	A
24	00QU02ØB9039	Fleuve St-Laurent à 100 mètres de la rive nord (près de Repentigny)	11X	A,B,C,D,E

NUMERO DE CARTE	NO. NAQUADAT	DESCRIPTION	TOURNEES	PARAMETRES
25	00QU02ØJ9040	Fleuve St-Laurent 200 mètres en amont de l'Ile Beauregard (Cap St-Michel) au centre du fleuve	11X	A,B,C,D,E
26	00QU02ØJ9041	Fleuve St-Laurent 100 mètres en aval de l'Ile Hertel (près de Cap St-Michel) au centre de la voie navigable	11X	A,B
27	00QU02PK9058	Fleuve St-Laurent à 30 mètres du quai de Leclercville	6X	A,B
28	00QU02PC9060	Fleuve St-Laurent voie navigable près de la bouée rouge #D12 en face de Leclercville	6X	A,B
29	00QU02PC9061	Fleuve St-Laurent à 30 mètres du quai de St-Charles de Grondines	6X	A,B
30	00QU02PH9062	Fleuve St-Laurent entre l'Ile d'Orléans et la rive sud (partie sud)	5X	A,B
31	00QU02PH9063	Fleuve St-Laurent entre l'Ile d'Orléans et la rive sud (C.C.)	5X	A,B
32	00QU02PH9064	Fleuve St-Laurent entre l'Ile d'Orléans et la rive sud (partie nord)	5X	A,B
33	00QU02PE9065	Fleuve St-Laurent entre l'Ile d'Orléans et la rive nord (partie sud)	5X	A,B
34	00QU02PE9066	Fleuve St-Laurent entre l'Ile d'Orléans et la rive nord (C.C.)	5X	A,B
35	00QU02PE9067	Fleuve St-Laurent entre l'Ile d'Orléans et la rive nord (partie nord)	5X	A,B
36	00QU02ØA9068	Rivière l'Assomption à son embouchure sous le pont de la route #40	11X	A,B,C,D,E
37	00QU02ØA9069	Rivière des Prairies à son embouchure	11X	A,B,C,D,E
38	00QU02ØA9070	Rivière des Mille-Iles à son embouchure	11X	A,B,C,D,E

NUMERO DE CARTE	NO. NAQUADAT	DESCRIPTION	TOURNEES	PARAMETRES
39	00QU02MC9201	Fleuve St-Laurent Lac St-François face à l'usine d'épuration de Cornwall à 250 mètres de la rive	6X	A,B,E
40	00QU02MC9202	Fleuve St-Laurent Lac St-François près de la bouée du diffiseur de Cornwall 325 mètres en amont de l'Ile Pilon	6X	A,B,E
41	00QU02MC9203	Fleuve St-Laurent Lac St-François entre les Iles Cornwall et Pilon voie navigable 550 mètres au nord de l'Ile Cornwall	6X	A,B,E
42	00QU02MC9204	Fleuve St-Laurent Lac St-François 200 mètres au sud de l'Ile Cornwall vis à vis la bouée rouge no. D96	6X	A,B,E
43	00QU02MC9205	Fleuve St-Laurent Lac St-François voie navigable sud de l'Ile Cornwall amont des bouées D95 et D96	6X	A,B,E
44	00QU02MC9206	Fleuve St. Laurent Lac St-François 250 mètres au nord de la réserve St-Régis à l'extrème ouest	6X	A,B,E
45	00QU02MC9207	Rivière St-Régis 30 mètres en amont de l'Ile Mud (Réserve indienne St-Régis)	6X	A,B,E

PARAMETRES:

A - Températures, pH, conductivité, alcalinité, dureté, turbidité, couleur, matières, solides en suspension totales, NO_2 - NO_3, TKN, phosphore total, métaux lourds (Cd, Cu, Fe, Ni, Mn, Pb, Zn, Cr), mercure.

B - Ions majeurs (Ca, K, Mg, Na, Cl, SO_4)

C - Matières solides en suspension fixes.

D - Coliformes totaux, coliformes fécaux, streptocoques fécaux, arsenic, sélénium, cyanures, carbone organique total, ammoniaque.

E - PCB/OC

DESCRIPTION DU PROJET
DIRECTION DE LA QUALITY DES EAUX
1984/85

REGION Québec
NUMERO DU PROJET TF-0804

TITRE DU PROJET: Réseau de la qualité des eaux, transfrontalier Canada - U.S.

NOM BU PROGRAMME NATIONAL: Gestion des données sur la qualité des eaux.

CODE DU SCE 1.3

BUTS:

Dans les cours d'eau canado-étatsuniens au Québec, recueillir des données de qualité de l'eau, les analyser, les rendre adéquates pour fins d'utilisation et de publication, les interpréter, identifier et décrire les problèmes de pollution de l'eau, produire des rapports.

FONDEMENT:

Fournir des données précises et complètes sur les eaux intérieures du Canada.

DESCRIPTION DU PROJET:

Analyser et entrer les résultats dans NAQUADAT les échantillons prélevés par les Relevés hydrologiques 6 fois à 6 stations des rivières du 45ième parallèle. Publier un rapport documentaire sur les stations du basin versant du fleuve Saint-Jean, un rapport interprétatif sur la qualité des lacs transfrontaliers et un rapport documentaire sur les bassins versant du réseau.

RESOURCES: ($'000)

	Sous-Total
A.-P. TECHN.	0,4
PROF.	0,1
TOTAL A.-P.	0,5
TRAITEMENTS	16.1
FONCTIONNEMENT	8,2
CONTRATS	---
INVESTISSEMENT	2,1
TOTAL$	26,3

NUMERO DE CARTE	NO. NAQUADAT	DESCRIPTION	TOURNEES	PARAMETRES
46	00QU020E9101	Ruisseau Hall à environ 1 km au nord de Comins Mills	6X	F
47	00QU020E9108	Rivière Tomifobia sur le pont de la route entre Judge Mills et Baldwin Mills	6X	F,G
48	00QU020E9112	Rivière Tomifobia à 50 mètres en aval du pont de la route No. 143 à Rock Island	6X	F,G
49	00QU020E9113	Rivière Tomifobia à la limite ouest de Rock Island sur la route No. 247 en face de la maison No. 139	6X	F,G
50	00QU030J9129	Rivière Richelieu sur le pont tournant de la voie ferrée à Noyan	6X	F
51	002U020E9148	Rivière Tomifobia environ 1.5 km au sud de Comestock Mills	6X	F,G

PARAMETRES:

F - Température, pH, conductivité, alclinité, dureté, turbidité, phosphore total.

G - Coliformes totaux, coliformes fécaux, striptocoques fécaux.

DESCRIPTION DU PROJET
DIRECTION DE LA QUALITY DES EAUX
1984/85

REGION Québec
NUMERO DU PROJET S.T.

TITRE DU PROJET: Dissémination des substances toxiques

NOM DU PROGRAMME NATIONAL: Gestion des données sur la qualité de l'eau

CODE DU SCE 1.3

BUTS:

Dans le fleuve Saint-Laurent et les cours d'eau transfrontaliers, recueillir des données sur les substances toxiques, les analyser, les interpréter et les rendre adéquates pour fins d'utilisation et d'interprétation.

FONDEMENT:

Fournir de l'information sur la présence de substances toxiques dans l'environnement et la connaissance de leurs impacts actuels et potentiels.

DESCRIPTION DU PROJET:

Prélever des sédiments de fond à environ 50 stations dans le lac Saint-Louis fleuve Saint-Laurent); effectuer des analyses chimiques et biologiques. Publier le rapport final sur les sédiments du lac Saint-François. Mettre au point la technique de prélèvement de sédiments en suspension au moyen d'une centrigeuse ainsi que l'extraction in situ des toxiques dissouts dans l'eau au moyen d'une colonne à résine.

RESOURCES: ($'000)

	Sous-Total
A.-P. TECHN.	0,2
PROF.	3,0
TOTAL A.-P.	3,2
TRAITEMENTS	103,0
FONCTIONNEMENT	49,2
CONTRATS	---
INVESTISSEMENT	67,4
TOTAL$	219,6

PARAMETRES:

Eau - Température, pH, conductivité, OD, alcalinité, NO_2 - NO_3 phosphore total, ions moyens (Ca, K, Na, Mg)

Sédiments - granulométrie, Carbone organique, Al, As, Ba, Ca, Cd, Co, Cr, Cu, Fe, Hg, K, Mg, Mn, N total, Ni, Na, P total, Pb, S, Si, Sr, V, Zn, PCB/OC, PAH, chlororbenzèmes, chlorophénols, bactériologie.

Elutriat - pH, alcalinité, ions moyens (Ca, K, Mg, Na), Al, As, Ba, Cd, Cr, Ca, Cu, Fe, Hg, Mn, Ni, Pb, Si, V, Zn, PCB/OC, PAH, chlorophénols, chlorobenzènes, bioessais, (nématodes, bactéries, Selenastrum capricornitum, Daphnia, Spp, Rotiféres)

Elutriation - Brasser pendant 1/2 heure 1 volume de sédiment avec 4 volumes d'eau du milieu; après 1 heure de sédimentation, le surnageant est passé dans une centrifugeuse en continu et ensuite filtré sur 0,45 um.

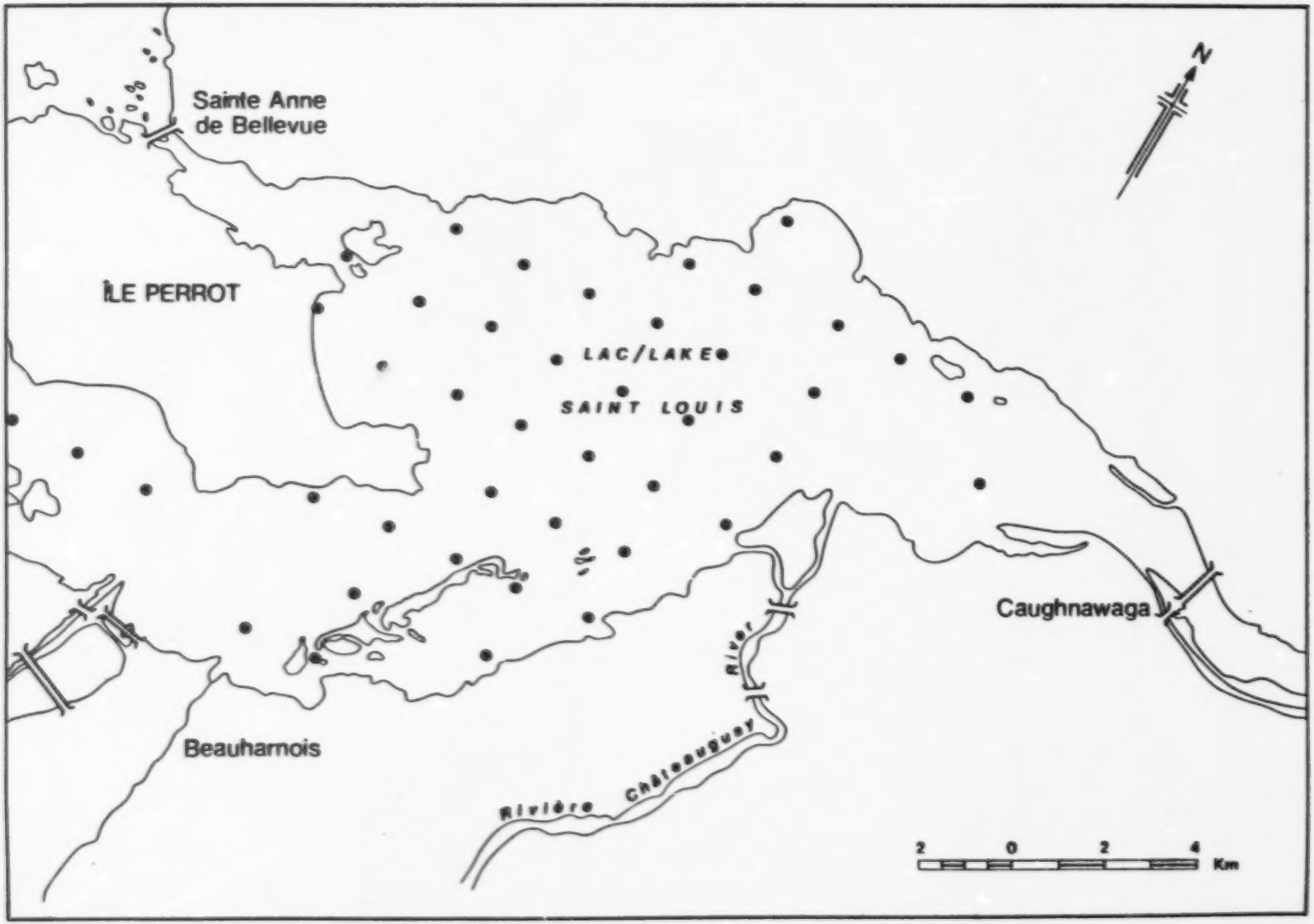


FIGURE 5 STATIONS D'ECHANTILLONNAGE DES SEDIMENTS 1984-1985
SEDIMENT SAMPLING STATIONS 1984-1985

DESCRIPTION DU PROJET
DIRECTION DE LA QUALITY DES EAUX
1984/85

REGION Québec
NUMERO
DU PROJET P.A.

TITRE DU PROJET: Support analytique au programme des précipitations acides

NOM DU PROGRAMME NATIONAL: Gestion des données sur la qualité del'eau

CODE DU SCE 1.3

BUTS:

Contribution du laboratoire au programme TADPA du lac Laflamme en réalisant des analyses d'ions majeurs, de métaux lourds, d'éléments nutritifs et de paramètres de support.

FONDEMENT:

Prédire les impacts des polluants aéroportés sur les systèmes aquatiques, la faune et les terres et, vérifier les effets de tels impacts.

DESCRIPTION DU PROJET:

Nous analyserons les échantillons d'eau provenant du lac Laframme et du réseau TADPA (35 stations fédérales) pour les paramètres suivants: ions majeurs, métaux lourds,
substances nutritives, pH, alcalinité Gran, couleur. Les résultats de ces analyses seront fournis au chargé de projet (Gestion et Planification) afin de calculer les bilans ioniques et d'évaluer les processus d'acidification.

RESOURCES: ($'000)

	Sous-Total
A.-P. TECHN.	0,4
PROF.	0,1
TOTAL A.-P.	0,5
TRAITEMENTS	16,0
FONCTIONNEMENT	8,2
CONTRATS	---
INVESTISSEMENT	5,0
TOTAL$	29,3

DESCRIPTION DU PROJET
DIRECTION DE LA QUALITY DES EAUX
1984/85

REGION Québec
NUMERO DU PROJET C-Q

TITRE DU PROJET: Entente qualité de l'eau Canada-Québec.

NOM DU PROGRAMME NATIONAL: Gestion des données sur la qualité de l'eau.

CODE DU SCE 1.3

BUTS:

Apport régional à la gestion et à la mise en oeuvre de l'entente-Canada-Québec sur la surveillance continue et les relevés de qualité de l'eau.

FONDEMENT:

Fournir de l'information sur la présence de substances toxiques dans l'environnement et la connaissance de leurs impacts actuels et potentiels.

DESCRIPTION DU PROJET:

1) Assurer la gestion et l'administration des activités et des opérations reliées à l'entente.

2) Tenir au moins deux réunions du comité de coordination de l'entente et rédiger un rapport annuel.

3) L'entente sur la surveillance continue de la qualité des eaux couvre tous les réseaux de monitorage de la province de Québec, soient environ 400 stations.
Un total de 86 de ces stations sont fédérales (voir les projets précédents) et 142sont fédérales-provinciales, c'est-à-dire que le gouvernment fédéral en paie la moitié du coût d'exploitation, jusqu'à concurrence de $200,000
Les stations fédérales et fédérales-provinciales sont illustrées sur la carte de la figure 7.

RESOURCES: ($'000)

	Sous-Total
A.-P. TECHN. PROF.	1,0
TOTAL A.-P.	1,0
TRAITEMENTS	32,2
FONCTIONNEMENT	16,4
CONTRATS	--
INVESTISSEMENT	--
TOTAL$	48,6

Tableau B-2. LOCALISATION DES STATIONS FEDERALES-PROVINCIALES, 1983-1984 (suite)

Numéro de la station n° NAQUADAT	n° BQMA	Description de la station	Coordonnées UTM Zone	Est	Nord
	03020037	Rivière Magog au pont, route 55 à l'est de Magog	18	727250	5017250
	03020040	Rivière Saint-François, en amont de la Massawippi, au pont, route à Lennoxville	19	277000	5027500
	03020081	Rivière Saint-François au pont, route 116 à Richmond	18	722500	5059750
	03020082	Rivière Massawippi au pont de la rue Massawippi à Lennoxville	19	276300	5026700
	03020083	Rivière Saint-François au barrage hydro-électrique au sud de Weedon-centre	18	308100	5059200
	03040007	Rivière des Hurons au pont à 8 km de son embouchure avec le Richelieu près de Saint-Mathias	18	641750	5038850
	03040009	Rivière Richelieu à l'usine de filtration de Sorel	18	644800	5097300
	03040010	Rivière Richelieu au barrage de l'île Sainte-Marie au nord de Saint-Jean-sur-Richelieu	18	636650	5028200
	03040012	Rivière Richelieu au pont du CN à l'est de Lacolle	18	631250	4990900

Tableau B-2. LOCALISATION DES STATIONS FEDERALES-PROVINCIALES (1983-1984)

a) RESEAU-RIVIERES (Programmes 10001 et 10002)

Numéro de la station n° NAQUADAT	n° BQMA	Description de la station	Coordonnées UTM Zone	Est	Nord
	01150003	Rivière Matapédia au pont Mercier à Matapédia	19	653200	5315300
	01150004	Rivière Matapédia au pont, route à 2 km en amont du lac au Saumon	19	621150	5366100
	01170001	Rivière Madawaska au pont, route à Dégelis	19	527250	5266200
	02340004	Rivière Chaudière au pont, route à Notre-Dame-des-Pins	19	367500	5115500
	02340006	Chaudière au pont, en amont de la Drolet, au sud-ouest de Saint-Ludger	19	360900	5061050
	02340012	Rivière Chaudière au pont, route 20 près de Charny	19	325400	5176600
	02340034	Rivière Beaurivage au pont, route 171 à Saint-Etienne	19	323950	5168750
	02340014	Rivière Chaudière au pont, route 171 à Scott	19	340900	5151900
	03020031	Rivière Saint-François au pont, route 132 à Pierreville	18	668900	5103650
	03020035	Rivière Saint-François au pont, route 143 à Bromptonville	19	270100	5039900

Tableau B-2. LOCALISATION DES STATIONS FEDERALES-PROVINCIALES, 1983-1984 (suite)

Numéro de la station n° NAQUADAT	n° BQMA	Description de la station	Coordonnées UTM Zone	Est	Nord
	03040013	Rivière L'Acadie au pont à 1,1 km en amont du ruisseau Robert au sud-ouest de Carignan	18	628700	5031950
	03040015	Rivière Aux Brochets au pont, route 133 à Pike River	18	651800	4998250
	03040017	Rivière Richelieu à la traverse de Saint-Charles-sur-Richelieu	18	641000	5061150
	03090001	Rivière Châteauguay au pont, route 205 au nord de Sainte-Martine	18	593900	5015200
	03090002	Rivière des Anglais au pont, route à Howick	18	590700	5003700
	03090003	Rivière Châteauguay au pont à Dewittville	18	571200	4995700
	03090005	Rivière Châteauguay à 1,6 km en aval du pont de Powerscourt	18	565700	4985100
	04080003	Rivière Gatineau au pont, route en amont du ruisseau Chelsea au nord de Gatineau	18	441450	5037100
	4080005	Rivière Gatineau au pont, route 107 à Maniwaki	18	425650	5136850

Tableau B-2. LOCALISATION DES STATIONS FEDERALES-PROVINCIALES, 1983-1984 (suite)

Numéro de la station n° NAQUADAT	n° BQMA	Description de la station	Coordonnées UTM Zone	Est	Nord
	04300002	Rivière Kinojevis au pont, route 117 à l'est de McWatters	17	658700	5341400
	04300003	Rivière Beauchastel au pont, route à 1 km de son embouchure avec le lac La Bruère	17	650500	5335950
	04310002	Rivière des Outaouais au barrage de Carillon	18	548100	5046000
	04310008	Rivière des Outaouais au barrage Chenaux à Portage-du-Fort	18	369300	5049000
	04310009	Rivière des Outaouais au pont, route 101 à Temiscaming	18	645150	5174650
	04310010	Rivière Des Outaouais au pont, route 101 à Notre-Dame-du-Nord	17	613900	5271550
	04310011	Rivière des Outaouais à la traverse de Masson	18	467900	5040900
	05010007	Rivière Saint-Maurice à l'usine de filtration de Trois-Rivières	18	683750	5139050
	05010012	Rivière Shawinigan à 0,2 km de son embouchure avec le Saint-Maurice à Shawinigan	18	671150	5156300
	05010013	Rivière Saint-Maurice au barrage de La Tuque	18	665850	5256800
	05010014	Rivière Saint-Maurice au pont, route 157 à Shawinigan	18	672150	5055950

Tableau B-2. LOCALISATION DES STATIONS FEDERALES-PROVINCIALES, 1983-1984 (suite)

Numéro de la station n° NAQUADAT	n° BQMA	Description de la station	Coordonnées UTM Zone	Est	Nord
	05080001	Rivière Jacques-Cartier au pont, route à Sainte-Catherine	19	300200	5191300
	05080006	Rivière Jacques-Cartier au pont, route à l'embouchure à Donnacona	19	289550	5172900
	05220003	Rivière L'Assomption au pont, route à Le Gardeur	18	619100	5067300
	05220004	Rivière L'Assomption au pont, route à 0,6 km en amont de la Ouareau à l'est de Crabtree	18	623800	5088900
	05220005	Rivière de l'Achigan à l'est de l'Epiphanie au pont, route à 1 km de son embouchure avec l'Assomption	18	620400	5078150
	05220012	Rivière Ouareau à l'est de Crabtree au pont, route à 1,9 km de son embouchure avec L'Assomption	18	622850	5089750
	05220032	Rivière Ouareau au pont, route 341 en amont du lac Pontbriand à l'ouest de Rawdon	18	591650	5100550
	06220001	Rivière Péribonca au pont, route 169 à Sainte-Monique	19	290000	5402700
	06290002	Rivière Saguenay au pont, route à Chicoutimi	19	346850	5366250

Tableau B-2. LOCALISATION DES STATIONS FEDERALES-PROVINCIALES, 1983-1984 (suite)

Numéro de la station n° NAQUADAT	n° BQMA	Description de la station	Coordonnées UTM Zone	Est	Nord
	07100001	Rivière aux Outardes à la centrale Outardes-2 à Chute-aux-Outardes	19	544500	5442000
	07230003	Rivière Moisie au pont, route 138 au nord de Moisie	19	711600	5572200
	08070027	Rivière Bell au pont, route à Senneterre	18	334400	5361550
	08070028	Rivière Bell au pont, route 113 à Rapide-des-Cèdres	18	349100	5430500

Tableau B-2. LOCALISATION DES STATIONS FEDERALES-PROVINCIALES, 1983-1984 (suite)

b) RESEAU-LACS (Programme 10003)

Numéro de la station n° NAQUADAT	n° BQMA	Année d'échantillonnage	Description de la station (bassin versant)	Coordonnées UTM Zone	Est	Nord
	01150005	B	Lac Causapscal (Matapédia)	19	638700	5371200
	01150013	(84)	Lac Towago (Matapédia)	19	605600	5386800
	01170013	(84)	Lac Touladi (Madawaska)	19	517900	5285600
	01170007	(83)	Lac Saint-Jean (Madawaska)	19	512400	5314300
	01170006	(83)	Lac Squatec (Madawaska)	19	531000	5281100
	02340021	(83)	Lac à la Raquette (Chaudière)	19	384100	5135900
	02340029	(84)	Lac des Joncs (Chaudière)	19	355150	5034400
	03020161	(83)	Lac Maskinongé (Saint-François)	19	326600	5071800
	03020166	(84)	Lac Nick (Saint-François)	18	709800	5009850
	03020163	B	Lac Lindsay (Saint-François)	19	300300	5005900
	03020167	(84)	Lac Magill (Saint-François)	19	321700	5051100
	03020098	(83)	Lac Moffat (Saint-François)	19	320000	5048900
	03020162	(83)	Lac des Iles (Saint-François)	19	329800	5072600
	03020164	(83)	Lac Whitton (Saint-François)	19	340100	5054800
	03020127	(83)	Lac Bowker (Saint-François)	18	718500	5034000
	03020088	(83)	Lac Fraser (Saint-François)	18	720850	5029700

Tableau B-2. LOCALISATION DES STATIONS FEDERALES-PROVINCIALES, 1983-1984 (suite)

Numéro de la station n° NAQUADAT	n° BQMA	Année d'échantillonnage	Description de la station (bassin versant)	Coordonnées UTM Zone	Est	Nord
	03020165	(83)	Lac Larouche (Saint-François)	18	720250	5038500
	04080071	(84)	Lac du Brochet (Gatineau)	18	434150	5067000
	04080068	(83)	Lac Gosselin (Gatineau)	18	476050	5302000
	04080072	(84)	Lac Saint-Amour (Gatineau)	18	396100	5239900
	04080074	(84)	Lac Byrd (Gatineau)	18	355650	5210450
	04080073	(84)	Lac Poulter (Gatineau)	18	369800	5215700
	04080069	(83)	Lac Retty (Gatineau)	18	372750	5226300
	04080031	(83)	Lac Désert (Gatineau)	18	399050	5158250
	04300046	(83)	Lac Alfred (Outaouais)	17	722800	5266900
	04300079	(84)	Lac Devlin (Outaouais)	17	677900	5259900
	04300047	(83)	Lac Granet (Outaouais)	18	310300	5299250
	04300078	(84)	Lac Chabot (Outaouais)	17	633800	5299300
	04300080	(84)	Lac Beaudry (Outaouais)	17	656600	5289450
	04300081	(84)	Lac Denain (Outaouais)	18	351500	5306600
	04300045	(83)	Lac Guillet (Outaouais)	17	676300	5252100
	05010040	(84)	Lac Tourouvre (Saint-Maurice)	18	657800	5292100

Tableau B-2. LOCALISATION DES STATIONS FEDERALES-PROVINCIALES, 1983-1984 (suite)

Numéro de la station n° NAQUADAT	n° BQMA	Année d'échantillonnage	Description de la station (bassin versant)	Coordonnées UTM Zone	Est	Nord
	05010023	B	Lac du Caribou (Saint-Maurice)	18	665200	5199600
	05010036	(84)	Lac Flamand (Saint-Maurice)	18	619500	5268400
	05010065	B	Lac Morissette (Saint-Maurice)	18	581000	5147350
	05010066	(85)	Lac Reid (Saint-Maurice)	18	649900	5182800
	05010037	(84)	Lac Capimit (Saint-Maurice)	18	552200	5298400
	05010039	(84)	Lac Mondonac (Saint-Maurice)	18	578100	5250100
	05010029	B	Lac Sarto (Saint-Maurice)	18	563350	5278950
	05010038	(84)	Lac Berlinguet (Saint-Maurice)	18	565200	5391500
	05010030	(83)	Lac Tessier (Saint-Maurice)	18	480550	5344400
	05010031	(83)	Grand lac Bostonnais (Saint-Maurice)	19	706400	5308600
	06220016	(85)	Lac C7943 (Péribonka)	19	326300	5690300
	06220017	(85)	Lac Allenou (Péribonka)	19	331800	5656200
	06220014	(85)	Lac C7946 (Péribonka)	19	352300	5746900
	06220005	(83)	Lac Double (Péribonka)	19	402500	5630500
	06220006	(83)	Lac à Paul (Péribonka)	19	373550	5526600
	06220018	(85)	Lac C7942 (Péribonka)	19	371700	5642000

Tableau B-2. LOCALISATION DES STATIONS FEDERALES-PROVINCIALES, 1983-1984 (suite)

Numéro de la station n° NAQUADAT	n° BQMA	Année d'échantillonnage	Description de la station (bassin versant)	Coordonnées UTM Zone	Est	Nord
	06220015	(85)	Lac C7944 (Péribonka)	19	364000	5712700
	06220008	(84)	Lac du Goéland (Péribonka)	19	306500	5518500
	06220007	(83)	Lac Milot (Péribonka)	19	296000	5423900
	06220013	(85)	Lac Le Bausais (Péribonka)	19	344200	5641800
	07100007	(85)	Lac Forton (Outardes)	19	403800	5765600
	07100002	(84)	Lac Bonneau (Outardes)	19	504100	5553100
	07100006	(85)	Lac Brue (Outardes)	19	411600	5673300
	07100003	(85)	Lac C7948 (Outardes)	19	418500	5751800
	07100010	(85)	Lac 20331 (Outardes)	19	466000	5661600
	07100005	(85)	Lac Aubin-Tellier (Outardes)	19	406500	5711500
	07100009	(85)	Lac 20339 (Outardes)	19	459000	5679800
	07100004	B	Lac du Castor Noir (Outardes)	19	383900	5746100
	07100008	(85)	Lac 20421 (Outardes)	19	464600	5720600
	07230010	(84)	Lac Fernand (Moisie)	19	708200	5624900
	07230009	(83)	Grand lac Germain (Moisie)	19	661100	5671300
	08070043	(84)	Lac Maicasagi (Nottaway)	18	382000	5532500

Tableau B-2. LOCALISATION DES STATIONS FEDERALES-PROVINCIALES, 1983-1984 (suite)

Numéro de la station n° NAQUADAT	n° BQMA	Année d'échantillonnage	Description de la station (bassin versant)	Coordonnées UTM Zone	Est	Nord
	08070037	(83)	Lac Waswanipi (Nottaway)	18	396000	5483900
	08070042	(84)	Lac Roger (Nottaway)	18	409700	5401800
	08070073	(85)	Lac C7949 (Nottaway)	18	522000	5574150
	08070038	(83)	Lac Doda (Nottaway)	18	487300	5474550
	08070041	(84)	Lac Gabriel (Nottaway)	18	538700	5460400
	08070034	(83)	Lac Feuquières (Nottaway)	18	551400	5448200
	08070040	(84)	Lac Yvonne (Nottaway)	18	499500	5442000
	08070044	(84)	Lac Germain (Nottaway)	18	463000	5478000
	08070039	(84)	Lac Léonce (Nottaway)	18	395700	5330450
	08070033	(83)	Lac 17929 (Nottaway)	18	476800	5401700
	08070035	B	Lac Cuvillier (Nottaway)	18	386200	5416450
	08070032	B	Lac des Ormeaux (Nottaway)	18	414800	5335150
	08070036	B	Lac MacIvor (Nottaway)	18	290400	5520400

Tableau B-2. LOCALISATION DES STATIONS FEDERALES-PROVINCIALES, 1983-1984 (suite)

c) RESEAU-TOXIQUES (Programme 10004)

Numéro de la station n° NAQUADAT	n° BQMA	Description de la station	Coordonnées UTM Zone	Est	Nord
		Rivière à la Truite à Kensington (bassin de la rivière Châteauguay)	18	554700	4984500
		Rivière Châteauguay à Powerscourt	18	566300	4983700
		Rivière Châteauguay, en amont de Huntingdon	18	564900	4991400
		Rivière Châteauguay, en amont de Dewittville	18	571000	4995200
		Rivière aux Outardes (bassin de la Châteauguay) près de l'exutoire, en amont de Ormstown	18	577800	4996200
		Rivière Châteauguay, en aval de Ormstown	18	584200	5000600
		Rivière Châteauguay, en amont de Sainte-Martine	18	591900	5001000
		Rivière des Anglais, en amont de Howick (bassin de la Châteauguay)	18	593100	5010300
		Rivière Châteauguay, en amont de Châteauguay	18	598000	5022100
		Rivière Châteauguay, en aval de Châteauguay	18	597400	5025300
		Lac Saint-Louis, en amont de la rivière Châteauguay	18	595300	5023900

Tableau B-2. LOCALISATION DES STATIONS FEDERALES-PROVINCIALES, 1983-1984 (suite)

Numéro de la station n° NAQUADAT	n° BQMA	Description de la station	Coordonnées UTM Zone	Est	Nord
		Lac Saint-Louis, en aval de la rivière Châteauguay	18	599500	5028000
		Rivière L'Assomption, en amont de Saint-Côme	18	591700	5127500
		Lac Noir (bassin de L'Assomption)	18	612100	5125600
		Rivière L'Assomption, en amont de Joliette	18	616600	5105700
		Rivière L'Assomption, en aval de Joliette	18	623300	5094100
		Lac Pontbriand, en amont de Rawdon (bassin de L'Assomption)	18	592200	5100400
		Rivière Ouareau, en aval de Rawdon (bassin de L'Assomption)	18	605900	5095700
		Rivière Ouareau, en aval de Crabtree (bassin de L'Assomption)	18	620400	5090800
		Rivière Saint-Esprit (bassin de L'Assomption)	18	623200	5082200
		Lac de l'Achigan (bassin de L'Assomption)	18	580700	5087900
		Rivière l'Achigan, en aval de Laurentides (bassin de L'Assomption)	18	598400	5077300
		Rivière l'Achigan, en aval de L'Epiphanie (bassin de L'Assomption)	18	618600	5078300

Tableau B-2. LOCALISATION DES STATIONS FEDERALES-PROVINCIALES, 1983-1984 (suite)

Numéro de la station n° NAQUADAT	n° BQMA	Description de la station	Coordonnées UTM Zone	Est	Nord
		Rivière L'Assomption, en aval L'Assomption	18	621300	5072800
		Ruisseau Vacher	18	617600	5087800
		Rivière des Prairies (embouchure de L'Assomption)	18	618600	5078300
		Fleuve Saint-Laurent à Repentigny (embouchure de L'Assomption)	18	621300	5072800
		Rivière Richelieu, en amont de Lacolle	18	631200	4990900
		Rivière Richelieu, en amont de Saint-Jean à Pointe-à-la-Meule	18	636900	5009800
		Rivière Richelieu, en aval de Saint-Jean	18	636400	5028000
		Rivière Richelieu, bassin de Chambly	18	633400	5034900
		Rivière Richelieu, bassin de Chambly	18	635700	5035700
		Rivière L'Acadie, en aval de L'Acadie; station au pont de la route 104	18	627500	5025800
		Ruisseau Massé, en aval de Saint-Basile-le-Grand	18	633800	5038800
		Rivière des Hurons, en amont de les Hurons	18	636800	5035100

Tableau B-2. LOCALISATION DES STATIONS FEDERALES-PROVINCIALES, 1983-1984 (suite)

Numéro de la station n° NAQUADAT	n° BQMA	Description de la station	Coordonnées UTM Zone	Est	Nord
		Rivière Richelieu, en aval de Beloeil	18	640300	5055600
		Rivière Richelieu, en amont de Saint-Denis	18	641900	5069800
		Rivière Richelieu, en aval de Saint-Roch-de-Richelieu	18	643100	5084200
		Rivière Richelieu à Sorel	18	645300	5100500
		Fleuve Saint-Laurent, en amont de Sorel, embouchure du Richelieu	18	642100	5097600
		Fleuve Saint-Laurent en aval de Sorel, embouchure du Richelieu	18	646900	5101000
		Bassin du Saguenay, lac Sébastien	19	339200	5392483
		Bassin du Saguenay, rivière Shipshaw, 5 km avant l'exutoire	19	333900	5372900
		Rivière Saguenay, en aval d'Alma	19	309100	5378400
		Bassin du Saguenay, rivière aux Sables à Kénogami	19	333600	5367000
		Rivière Saguenay, en aval d'Arvida	19	341800	5367800

Tableau B-2. LOCALISATION DES STATIONS FEDERALES-PROVINCIALES, 1983-1984 (suite)

Numéro de la station n° NAQUADAT	n° BQMA	Description de la station	Coordonnées UTM Zone	Est	Nord
		Rivière Chicoutimi, en amont de Chicoutimi	19	344800	5364800
		Rivière Saguenay à Pointe-à-l'Ilet	19	352500	5368000
		Rivière Saguenay, Baie des Ha! Ha!	19	363100	5354500
		Rivière Saint-Maurice, en amont de Grand-Mère	18	676500	5167100
		Rivière Saint-Maurice, en amont de Saint-Etienne-des-Grès, au pont du CP	18	671700	5147200
		Bassin du Saint-Maurice, en amont de Trois-Rivières, usine de filtration	18	683450	5138730
		Rivière Saint-Maurice, en aval de Saint-Etienne-des-Grès	18	675600	5143400

Table B-3. FEDERAL STATION LOCATIONS 1983-84 (continued)

b) NOUVEAU QUEBEC NETWORK

Station Number #NAQUADAT	#BQMA	Site Description	UTM Coordinates Zone	Eastern	Northern
01QU02OH9123		Lac Champlain, baie Missisquoi, sur la frontière à la partie extrême est, à 800 m de la côte est	18	651400	4985400
01QU02OH9124		Lac Champlain, baie Missisquoi, sur la frontière à la partie est, à 2700 m de la côte est	18	647800	4985300
01QU02OH9125		Lac Champlain, baie Missisquoi, sur la frontière, au centre, à 1550 m de la côte ouest	18	643900	4985200
01QU02OH9126		Lac Champlain, baie Missisquoi, sur la frontière à la partie ouest, à 550 m de la côte ouest	18	643200	4985200
01QU02OH9127		Lac Champlain, baie Missisquoi, sur la frontière, au centre de la baie Chapman	18	641900	4985200
01QU02OH9156		Lac Champlain, baie Missisquoi, à 1250 m à l'ouest de Philipsburg	18	650300	4989100
01QU02OH9159		Lac Champlain, baie Missisquoi, à 1 km de l'embouchure de la rivière aux Brochets	18	649000	4990900
01QU02OH9158		Lac Champlain, baie Missisquoi, au centre de la baie de Venise	18	645600	4991800

Table B-3. FEDERAL STATION LOCATIONS 1983-84 (continued)

Station Number #NAQUADAT	#BQMA	Site Description	UTM Coordinates Zone	Eastern	Northern
00QU03ED9401		Grande rivière de la Baleine, premier rapide en aval de la Denys	18	347200	6116700
00QU03LF9402		Rivière Caniapiscau, en amont de la chute du Calcaire	19	481500	6370100
00QU03KC9403		Rivière aux Mélèzes, à 7,6 km de la Koksoak	19	463300	6392000
00QU03HC9404		Rivière à la Baleine, à 17 km en amont de la Chaumaux	19	587600	6408300
00QU03FA9405		Rivière Nastapoca, à 29 km de son embouchure	18	4[illegible]300	6302400
00QU03GB9406		Rivière Innuksuak, à 15,3 km de son embouchure	18	327200	6488900
00QU03GD9407		Rivière Powungnituk, à 48 km en amont du village inuit de Powungnituk	18	402900	6670400
00QU03HA9408		Rivière Arnault, à 13,7 km de la rivière Hamelin	19	337800	6653800
00QU03JB9409		Rivière aux Feuilles, à 6,4 km de la Péladeau (rivière Gwenyveau)	19	417500	6500700
00QU03HD9410		Rivière Georges au niveau supérieur des chutes Helen à 4 km	20	332700	6449300

Table B-3. FEDERAL STATION LOCATIONS 1983-84 (continued)

d) LRTAP NETWORK

Station Number #NAQUADAT	#BQMA	Site Description	UTM Coordinates Zone	Eastern	Northern
- -		Lac Veilleux(S)	19	305700	5252000
- -		Lac McLeod(S)	19	351000	5258700
- -		Lac Najoua(S)	18	721600	5213700
- -		Lac Congré(S)	18	723000	5287000
- -		Lac Fauvette(S)	18	633500	5244100
- -		Lac Adonys(S)	18	551500	5183600
- -		Lac S.N. 36724(S)	18	573000	5178500
- -		Lac Thibert(S)	18	640300	5167700
- -		Lac Daniel(S)	19	289900	5296400
- -		Lac S.N. 35759(S)	19	380700	5297900
- -		Lac S.N. 92844(S)	18	657100	5278100
- -		Lac Laurent(S)	18	561400	5146900
- -		Lac Joncs(S)	18	623500	5178400

Table B-3. FEDERAL STATION LOCATIONS 1983-84 (continued)

Station Number #NAQUADAT	#BQMA	Site Description	UTM Coordinates Zone	Eastern	Northern
- -		Lac Dupré(S)	18	494900	5133600
- -		Lac des Papillons(S)	18	474200	5105900
- -		Lac Griffin(S)	18	498700	5102200
- -		Lac Bohème(S)	18	413300	5080500
- -		Lac Clair(S)	18	416800	5049900
- -		Lac Duck(S)	18	433300	5076600
- -		Lac Graham(S)	18	625600	5072900
- -		Lac Lagou(T)	19	286700	5242600
- -		Lac Bonneville(T)	19	318100	5238600
- -		Lac Lemaire(T)	19	292300	5288600
- -		Lac Eclair(T)	18	652300	5190800
- -		Lac Cadieux(T)	19	306200	5323100
- -		Lac Chômeur(T)	18	708300	5301300
- -		Lac Metcalfe(T)	18	498700	5119800
- -		Lac Chevreuil(T)	18	505200	5099400
- -		Lac David(T)	18	455100	5128300
- -		Lac Sowden(T)	18	415200	5075900

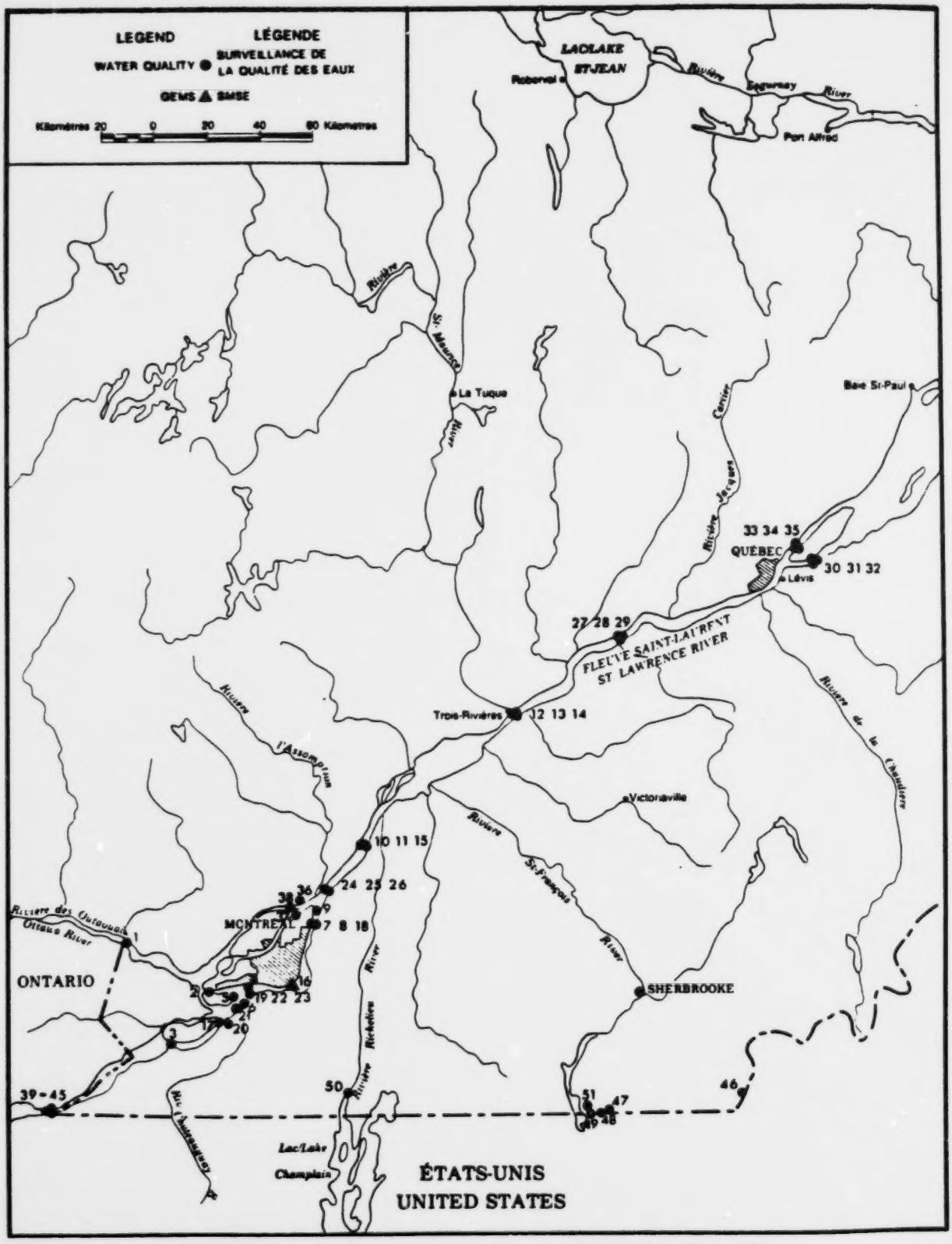


FIGURE 6 **WATER QUALITY BRANCH MONITORING STATIONS 1984-1985**

STATIONS DE SURVEILLANCE DE LA DIRECTION DE LA QUALITÉ DES EAUX 1984-85

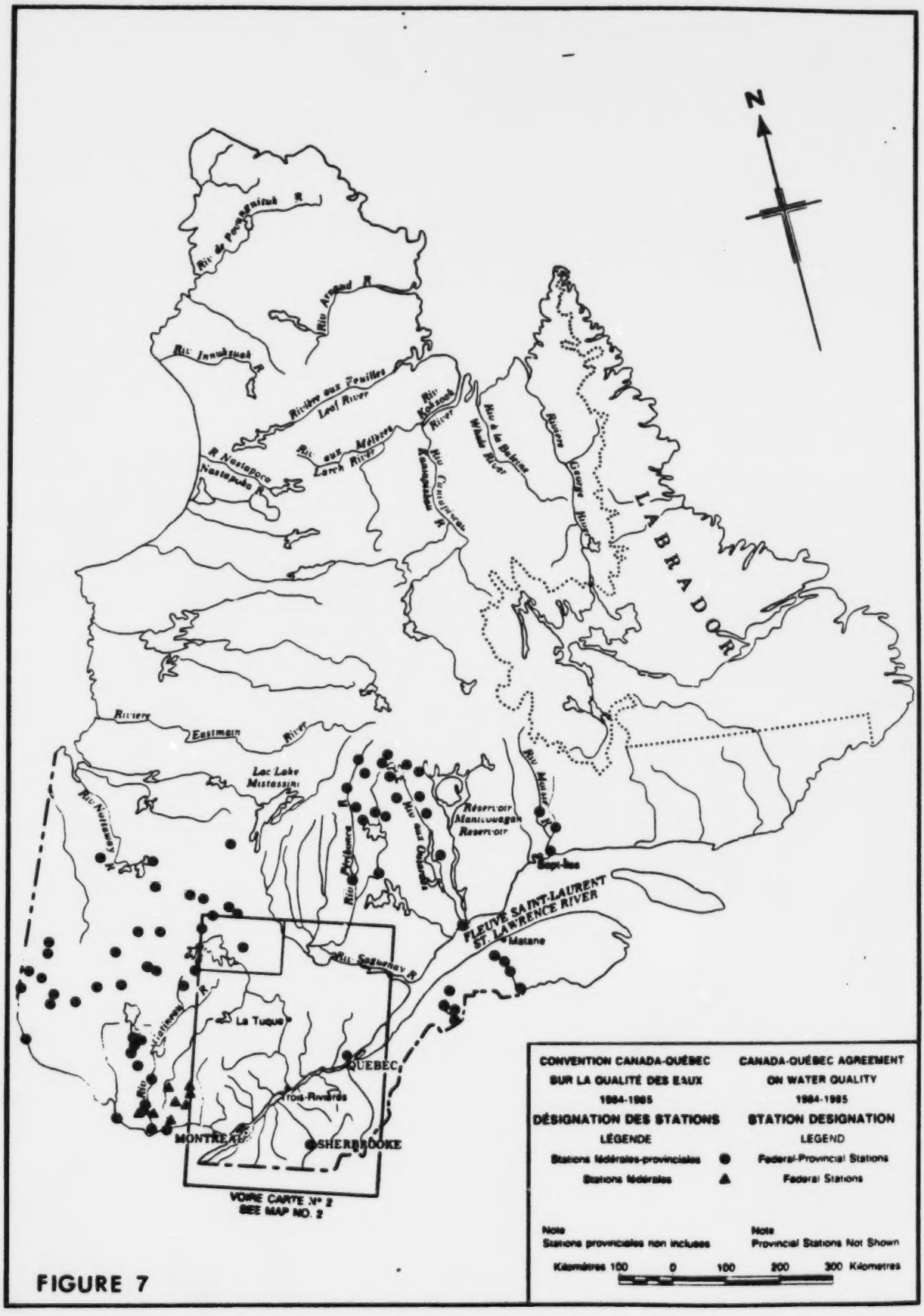

N
LABRADOR
Rivière Eastmain River
Lac Lake Mistassini
Réservoir Manicouagan Reservoir
FLEUVE SAINT-LAURENT
ST. LAWRENCE RIVER
Matane
La Tuque
QUÉBEC
Trois-Rivières
MONTRÉAL
SHERBROOKE
VOIRE CARTE N° 2
SEE MAP NO. 2
CONVENTION CANADA-QUÉBEC
SUR LA QUALITÉ DES EAUX
1984-1985
DÉSIGNATION DES STATIONS
LÉGENDE
Stations fédérales-provinciales
Stations fédérales
CANADA-QUÉBEC AGREEMENT
ON WATER QUALITY
1984-1985
STATION DESIGNATION
LEGEND
Federal-Provincial Stations
Federal Stations
Note
Stations provinciales non incluses
Note
Provincial Stations Not Shown
Kilomètres 100 0 100 200 300 Kilometres

FIGURE 7

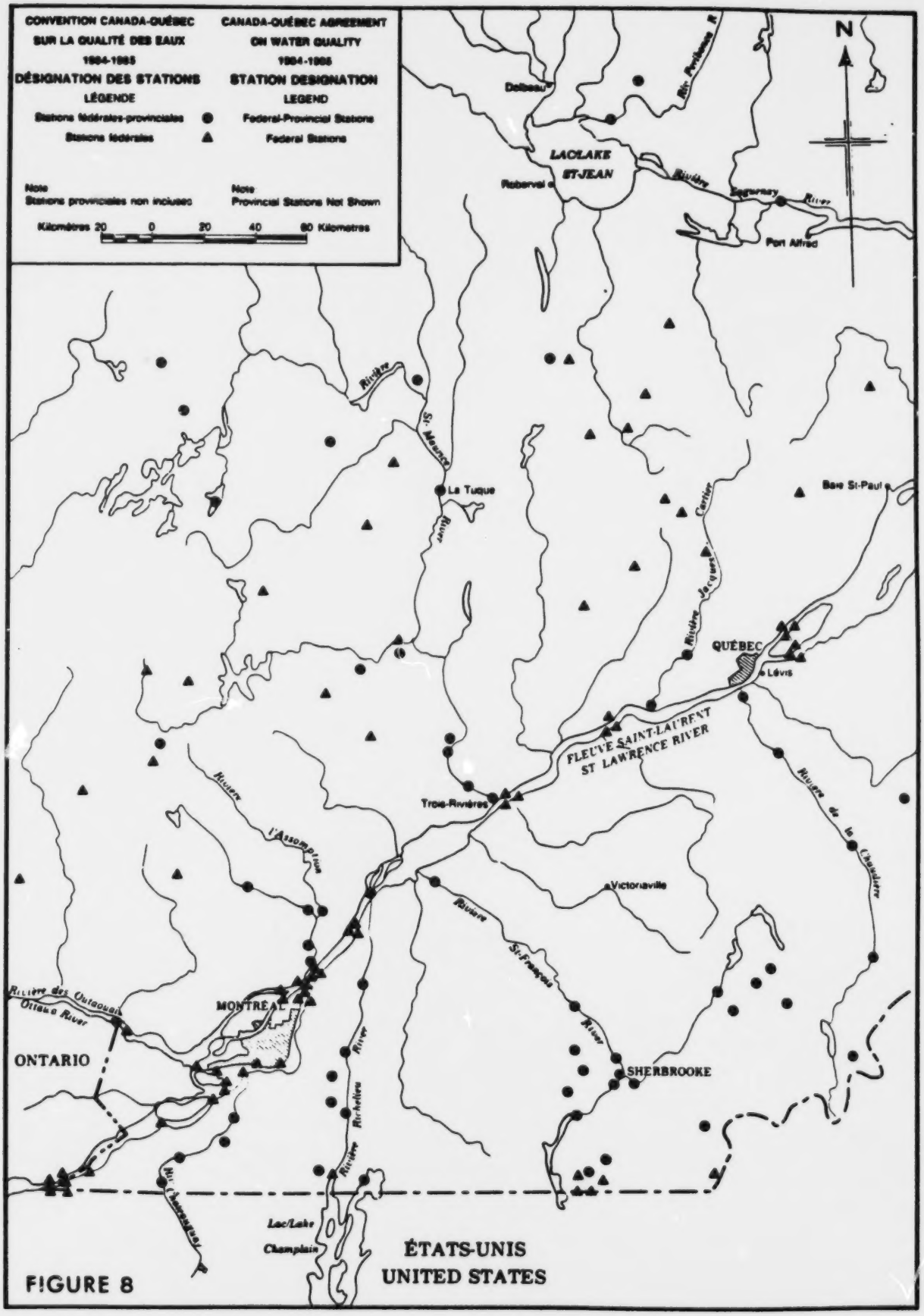

CONVENTION CANADA-QUÉBEC
SUR LA QUALITÉ DES EAUX
1984-1985
DÉSIGNATION DES STATIONS
LÉGENDE
Stations fédérales-provinciales
Stations fédérales
Note
Stations provinciales non incluses
Kilomètres 20 0 20 40 80 Kilomètres
CANADA-QUÉBEC AGREEMENT
ON WATER QUALITY
1984-1985
STATION DESIGNATION
LEGEND
Federal-Provincial Stations
Federal Stations
Note
Provincial Stations Not Shown
N
Dolbeau
Rivière Peribonca R.
LAC LAKE ST-JEAN
Réservoir
Rivière Saguenay River
Port Alfred
Rivière St. Maurice River
La Tuque
Baie St-Paul
Rivière Jacques Cartier
QUÉBEC
Lévis
FLEUVE SAINT-LAURENT
ST LAWRENCE RIVER
Rivière l'Assomption
Trois-Rivières
Rivière des Outaouais
Ottawa River
MONTRÉAL
ONTARIO
Victoriaville
Rivière St-François River
Rivière Richelieu River
SHERBROOKE
Rivière de la Chaudière
Lac Champlain
Lake
ÉTATS-UNIS
UNITED STATES

FIGURE 8

D.3 ONTARIO REGION

Région de l'Ontario

PROJECT DESCRIPTION
WATER QUALITY BRANCH - 1984/85

REGION/HQ Ontario
PROJECT NO: WQ-01

PROJECT TITLE:
LAKE SUPERIOR INTENSIVE SURVEILLANCE

NATIONAL PROGRAM NAME ECS CODE 1.1 CANADA-US & INTERJURISDICTIONAL WATER MANAGEMENT

STUDY TEAM C.H. Chan

GOALS: To process and analyze 1983 Lake Superior open lake water quality data.

To prepare an interpretive report on the water quality of Lake Superior before December 1984.

RATIONALE: To fulfill Canada's commitments for surveillance and monitoring under 1978 Canada-US Agreement on Great Lakes Water Quality.

DESCRIPTION:

A statistical summary of the water quality data will be prepared for publication. Water quality data will be examined in relation to (1) changes with historical data (2) spatial variation (3) compliance with W.Q. objectives.

RESOURCES ($'000) 1984/85

ACCEPTABLE ANALYSIS TURNAROUND TIME 90 d

	Total
PY TECH. PROF.	0.7
TOTAL PY	0.7
SALARIES	28.1
O&M	2.0
CONTRACTS	-
CAPITAL	-
TOTAL $	30.1

PROJECT DESCRIPTION
WATER QUALITY BRANCH - 1984/85

REGION/HQ Ontario
PROJECT NO: WQ-02

PROJECT TITLE: Offshore Surveillance & Analysis
Lake Ontario

NATIONAL PROGRAM NAME ECS CODE 1.1: - Canada-US and Interjurisdictional Water Management

STUDY TEAM: R. Stevens, M. Neilson, N.D. Warry

GOALS:

1) Water Quality Report based on 1981-82 data - completion date: May 1984
2) Lake Ontario Intensive Report as directed by SWG, completion date: Nov. 84
3) Completion of zonation pattern review and document procedure in a report - completion date: March 1985.
4) Completion of two full chemistry cruises in April 1984 and March 1985 NB. March 1984 cruise included in the 82-83 project forecasts.
5) Participate in special studies
6) Prepare 1 submission for IAGLR Conference by March 1985.
7) Participation on Lake Ontario Task Force.

RATIONALE: To fulfill Canada's commitments for surveillance and monitoring under the Canada U.S. Great Lakes Water Quality Agreement and for the provision of data and assistance to the International Joint Commission.

DESCRIPTION: Upon completion of Lake Ontario Water Quality report summarizing the results for the 1981-82 intensive years. Preparation of an Intensive Report will commence. This report will summarize the results of surveillance efforts on Lake Ontario since IFYGL, with emphasis on work conducted in 1981 and 1982. It will be submitted to the Surveillance Work Group upon completion. In addition, at least one paper will be prepared for presentation at the IAGLR conference in 1985.

The annual component f the L. Ontario Surveillance Program will include two cruises, one in April 1984 and one in March 1985. Samples will be collected at 94 stations for an extensive series of parameters

Multivariate statistical procedures developed in 1983 will be used to complete rezonation of the lake which will then be incoporated into the ALDAR program.

Special study efforts will likely include task force participation, scientific coordination and a review of biomonitoring techniques for application tc a surveillance program.

RESOURCES ($'000) 1984/85

ACCEPTABLE ANALYSIS TURNAROUND TIME 60 days

	Total
PY TECH.	
PROF.	1.3
TOTAL PY	1.3
SALARIES	45.5
O&M	6.5
CONTRACTS	-
CAPITAL	
TOTAL $	52.0

LAKE ONTARIO

SURVEILLANCE STATIONS

Station Number	Latitude N.	Longitude W.
1	43° 18' 47"	79° 45' 02"
2	43° 20' 25"	79° 39' 56"
3	43° 16' 06"	79° 37' 05"
5	43° 25' 30"	79° 39' 31"
6	43° 27' 59"	79° 31' 47"
7	43° 32' 46"	79° 29' 18"
8	43° 37' 22"	79° 27' 13"
9	43° 35' 13"	79° 23' 47"
10	43° 40' 05"	79° 16' 02"
11	43° 35' 03"	79° 18' 44"
12	43° 30' 12"	79° 21' 13"
13	43° 25' 03"	79° 24' 05"
14	43° 23' 34"	79° 29' 12"
15	43° 19' 00"	79° 26' 36"
16	43° 16' 19"	79° 21' 34"
17	43° 13' 34"	79° 16' 27"
18	43° 18' 18"	79° 17' 00"
19	43° 23' 02"	79° 17' 10"
20	43° 20' 15"	79° 11' 51"
21	43° 18' 05"	79° 07' 11"
22	43° 17' 44"	79° 00' 16"
23	43° 22' 16"	79° 04' 02"
24	43° 26' 25"	79° 07' 46"
25	43° 31' 05"	79° 04' 47"
26	43° 36' 34"	79° 00' 59"
27	43° 42' 10"	78° 57' 25"
28	43° 46' 27"	78° 51' 19"
29	43° 49' 45"	78° 52' 14"
30	43° 49' 49"	78° 39' 44"
31	43° 53' 11"	78° 27' 37"
32	43° 46' 56"	78° 26' 14"
33	43° 35' 48"	78° 48' 07"
34	43° 27' 42"	78° 45' 37"
35	43° 21' 34"	78* 43' 45"
36	43° 29' 28"	78° 23' 07"

LAKE ONTARIO

SURVEILLANCE STATIONS

Station Number	Latitude N.	Longitude W.
37	43° 23' 29"	78° 22' 05"
38	43° 22' 57"	77° 59' 19"
39	43° 29' 09"	78° 59' 54"
40	43° 35' 20"	78° 00' 41"
41	43° 43' 02"	78° 01' 32"
42	43° 50' 23"	78° 02' 17"
43	43° 56' 58"	78° 03' 00"
44	43° 52' 57"	77° 54' 26"
45	43° 49' 11"	77° 47' 00"
46	43° 53' 02"	77° 41' 27"
47	43° 57' 02"	77° 35' 30"
48	43° 51' 44"	77° 31' 32"
49	43° 46' 17"	77° 26' 23"
52	43° 25' 55"	77° 42' 42"
53	43° 21' 01"	77° 42' 43"
54	43° 24' 48"	77° 34' 30"
55	43° 26' 34"	77° 26' 18"
56	43° 21' 36"	77° 30' 53"
57	43° 16' 25"	77° 35' 37"
58	43° 19' 37"	77° 26' 16"
59	43° 22' 53"	77° 17' 55"
60	43° 34' 52"	77° 11' 59"
61	43° 47' 14"	77° 09' 25"
62	43° 52' 45"	77° 00' 08"
63	43° 43' 47"	77° 00' 57"
64	43° 31' 34"	76° 55' 25"
65	43° 35' 21"	76° 53' 00"
66	43° 20' 01"	76° 50' 24"
67	43° 24' 32"	76° 47' 43"
68	43° 31' 52"	76° 43' 58"
69	43° 36' 26"	76° 42' 47"
70	43° 32' 47"	76° 37' 12"
71	43° 28' 38"	76° 31' 30"
72	43° 32' 59"	76° 31' 32"
73	43° 38' 10"	76° 17' 13"

LAKE ONTARIO

SURVEILLANCE STATIONS

Station Number	Latitude N.	Longitude W.
74	43° 45' 02"	76° 31' 10"
75	43° 50' 39"	76° 21' 11"
76	43° 56' 56"	76° 10' 36"
77	43° 57' 21"	76° 24' 30"
78	44° 05' 02"	76° 24' 34"
79	44° 04' 28"	76° 31' 20"
80	44° 08' 27"	76° 36' 39"
81	44° 00' 59"	76° 40' 16"
82	44° 03' 59"	76° 48' 50"
83	43° 59' 55"	76° 50' 34"
84	43° 53' 13"	76° 44' 02"
85	43° 45' 00"	79° 05' 01"
86	43° 15' 16"	79° 11' 40"
87	43° 17' 48"	77° 31' 00"
88	43° 35' 19"	76° 25' 00"
89	43° 41' 52"	76° 24' 59"
90	44° 08' 06"	76° 49' 29"
91	43° 55' 15"	78° 18' 27"
93	43° 19' 33"	78° 51' 56"
94	43° 19' 25"	77° 13' 05"
95	43° 18' 47"	77° 59' 59"
96	43° 13' 24"	79° 26' 44"
97	43° 57' 41"	76° 07' 22"
98	43° 56' 07"	76° 13' 59"

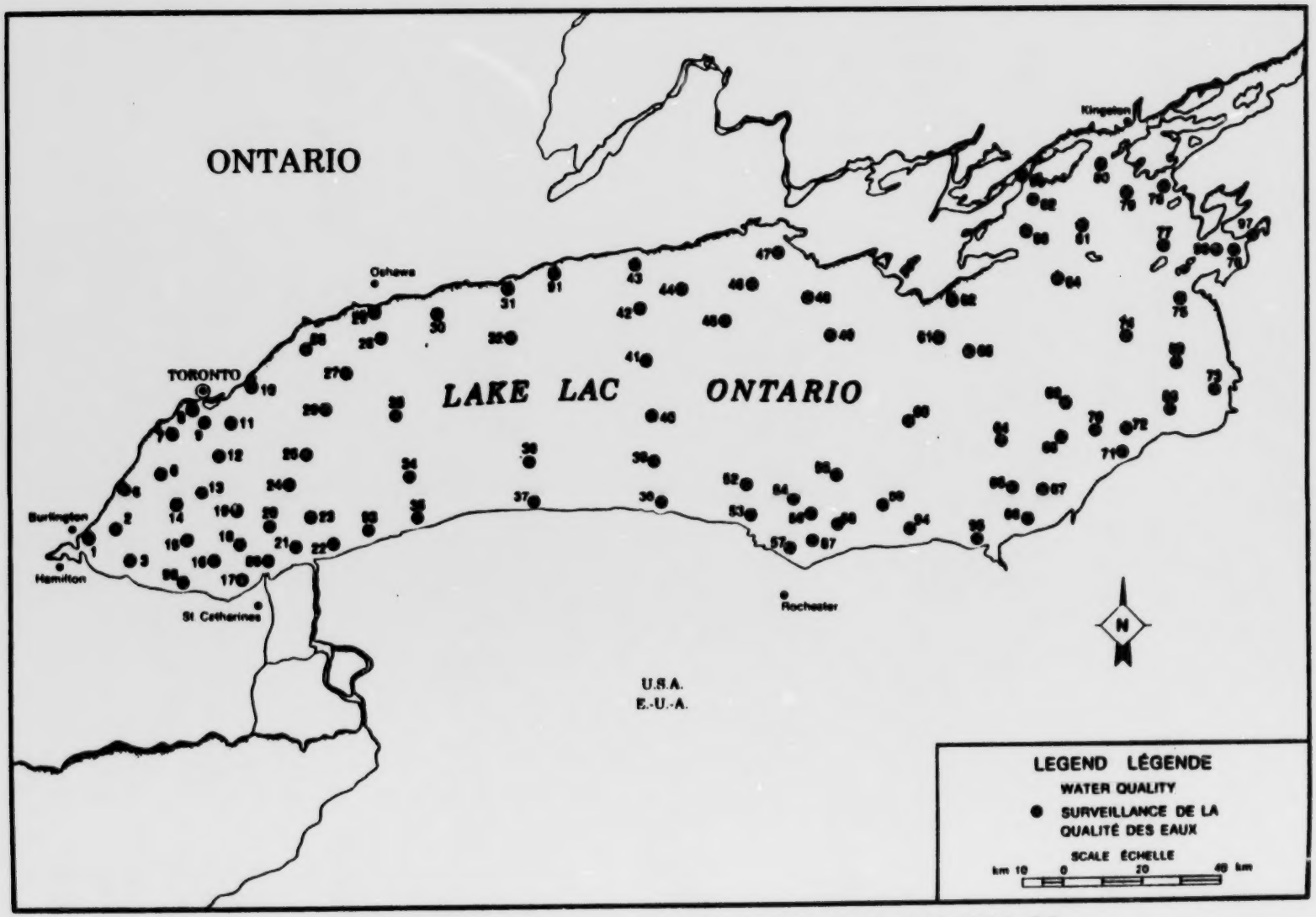


FIGURE 9 WATER QUALITY BRANCH MONITORING STATIONS 1984-85
STATIONS DE SURVEILLANCE DE LA DIRECTION DE LA QUALITÉ DES EAUX 1984-85

PROJECT DESCRIPTION
WATER QUALITY BRANCH - 1984/85

REGION/HQ Ontario
PROJECT NO: WQ- 04

PROJECT TITLE: ST. LAWRENCE RIVER WATER QUALITY MONITORING

NATIONAL PROGRAM NAME ECS CODE 1.1 CANADA-US AND INTERJURISDICTIONAL WATER MANAGEMENT

STUDY TEAM A. SYLVESTRE , TECHNICAL ASSISTANT

GOALS:

Collect daily samples to provide long term water quality records, to estimate the annual material exit loads from Great Lakes system and to characterize seasonal variation.

Collect monthly suspended sediments and large volume water samples in order to evaluate the concentrations of organic contaminants going out of Lake Ontario.

RATIONALE:

To fulfill Canada's surveillance and monitoring requirements in the Interconnecting Channels in support of GLISP as outlined in the 1978 Agreement.

DESCRIPTION: Daily samples are collected by an automatic sampler at Wolfe Island. Water samples are sent back through a personal service contract to CCIW for chemical analysis:

- daily: pH, conductivity, turbidity, TKN, NO_2+NO_3, NH_4 and T.P.
-weekly: Major ions and trace metals
-composite - Radioactivity.

A monthly suspended sediment sampling program began in 1982 and will continue this year. The samples of 1983 will be analysed for PCB's, OC's, PAH's, and T.M's. Occasional (not more than 4/year) large volume water samples will be collected for contaminants analysis, including TCDF and TCDD.

RESOURCES ($'000) 1984/85

ACCEPTABLE ANALYSIS TURNAROUND TIME 60 days

	Total
PY TECH.	0.1
PROF.	0.2
TOTAL PY	0.3
SALARIES	9.0
O&M	3.0
CONTRACTS	5.0
CAPITAL	2.0
TOTAL $	19.0

Map No.	NAQUADAT No.	Station Location
2	00ØNO2MA0030	St. Lawrence River at Wolfe Island

PROJECT DESCRIPTION
WATER QUALITY BRANCH - 1984/85

REGION/HQ Ontario
PROJECT NO: WQ- 03

PROJECT TITLE: NIAGARA RIVER WATER QUALITY MONITORING

NATIONAL PROGRAM NAME ECS CODE 1.1 CANADA-US AND INTERJURISDICTIONAL WATER MANAGEMENT

STUDY TEAM: K.W. KUNTZ, D. WARRY, TECHNICAL ASSISTANT

GOALS:

1) To continue collection of daily water quality samples at Fort Erie and Niagara-on-the Lake to provide water quality records for long term trend evaluation and to provide annual estimates of material loads from Lake Erie to Lake Ontario.
2) To ensure that the Fort Erie station is representative of Lake Erie water, some cooperative sampling will be completed with MOE.
3) To provide 1983 differential loading estimates for the Niagara River before August 1984.
4) To continue bi-weekly suspended sediment analysis at both the source and outlets of the Niagara River
5) To prepare report on "Loadings to Lake Ontario" for Lake Ontario Intensive Report by December, 1984.

RATIONALE: In support of GLISP to fulfill Canada's surveillance and monitoring requirements on the Interconnecting Channels as outlined in Annexes' 11 and 12 of the 1978 GLWQA.

DESCRIPTION: In a continuing project on the Niagara River, daily water samples are collected at Niagara-on-the-Lake (since 1975) and at a new station at Fort Erie (established in 1983) by an automatic sampler and returned weekly to Burlington for analysis. Suspended sediment samples will be collected bi-weekly for organic contaminants analysis. To ensure that the Fort Erie station is representative of Lake Erie input, some cooperative sampling will be undertaken with MOE. For the first time, annual loading estimates will be available for the Lake Erie input to the Niagara River and the Niagara River load to Lake Ontario. These differential loading estimates for the Niagara River have been one of the main problems for the NRTC in interpreting previous data for the NRTC report.

Considerable time will be spent analyzing data collected in previous years, particularly for the loading report for the Lake Ontario Intensive Report.

Membership on two subcommittees of the NRTC as well as the Niagara-St. Lawrence Task Force will be maintained. Coordination with MOE, NYDEC and EPA will continue.

RESOURCES ($'000) 1984/85

ACCEPTABLE ANALYSIS TURNAROUND TIME 1-2 mo.

	Total
PY TECH.	0.9
PROF.	1.4
TOTAL PY	2.3
SALARIES	86.5
O&M	15.0
CONTRACTS	5.0
CAPITAL	10.0
TOTAL $	116.5

Map No.	NAQUADAT No.	Station Location
1	00ØN02HA0019	Niagara River at Niagara-on-the-Lake (AWQM)
32	00ØN02HA0045	Niagara River at Fort Erie

PROJECT DESCRIPTION
WATER QUALITY BRANCH - 1984/85

REGION/HQ Ontario
PROJECT NO: WQ-05

PROJECT TITLE: NCR Water Quality

NATIONAL PROGRAM NAME ECS CODE 1.1: - CANADA U.S. & INTERJURISDICTIONAL WATER MANAGEMENT

STUDY TEAM: J. Merriman, and Technical Assistant

GOALS:

Carry out six surveys between May and November in the NCR to assess present water quality conditions. Data will be compared to previous work done in the area, when report is prepared in 1985.

RATIONALE:

The Ottawa River is a very important interprovincial river. With the completion of the Outaouais Regional interceptor collector and sewage treatment system, work will be carried out to evaluate the impact of the sewage treatment system.

DESCRIPTION:

Six surveys will be completed monthly between May and October at 24 stations. Samples will be analyzed for physical parameters, major ions, nutrients metals and microbiology. Data will be edited and entered into NAQUADAT at CCIW by Mar. 1985.

RESOURCES ($'000) 1984/85

ACCEPTABLE ANALYSIS TURNAROUND TIME 90 days

	Total
PY TECH. PROF.	
TOTAL PY	0.6
SALARIES	19.0
O&M	8.0
CONTRACTS	-
CAPITAL	2.0
TOTAL $	29.0

Map No.	NAQUADAT No.	Station Location
34	00QU02LA0051	Ottawa R. downstream of Portage Bridge midway across channel on Quebec side
35	00QU02LA0001	Ottawa R. downstream of M/C Bridge 50 metres off Quebec shore
36	00QU02LA0002	Ottawa R. downstream of M/C Bridge in line with second bridge abutment on Quebec side
37	00ØN02LA0028	Ottawa R. downstream of M/C Bridge in line with 2nd Bridge abutment on Ontario side.
38	00ØN02LA0029	Ottawa R. downstream of M/C Bridge 50 metres off Ontario shore
39	00QU02LA0004	Ottawa R. 200 metres upstream of Gatineau R. 50 metres off Quebec shore
40	00QU02LA0005	Ottawa R. 200 metres upstream of Gatineau R. 1/3 distance across
41	00ØN02LA0030	Ottawa R. 200 metres upstream of Gatineau R. 2/3 distance across
42	00ØN02LA0031	Ottawa R. 200 metres upstream of Gatineau R. 50 metres off Ontario shore
43	00QU02LA0060	Ottawa R. at CIP effluent 5 metres from outflow
44	00ØN02LA0059	Ottawa R. midstream between Lower Duck Island and Ontario shore at Green's Creek STP effluent
45	00QU02LB0001	Ottawa R. downstream of Lower Duck Island 50 metres off Quebec shore
46	00QU02LB0002	Ottawa R. downstream of Lower Duck Island midway between Quebec shore and Lower Duck Island
47	00ØN02LB0010	Ottawa R. downstream of Lower Duck Island 1/3 distance between Lower Duck Island and Ontario shore
48	00ØN02LB0011	Ottawa R. downstream of Lower Duck Island 50 metres off Ontario shore

Map No.	NAQUADAT No.	Station Location
49	00QU02LB0003	Ottawa R. at Hiawatha Park 50 metres off Quebec shore
50	00QU02LB0004	Ottawa R. at Hiawatha Park 1/3 distance across
51	00ØN02LB0012	Ottawa R. at Hiawatha Park 2/3 distance across
52	00ØN02LB0013	Ottawa R. at Hiawatha Park 50 metres off Ontario shore
53	00ØN02LA0009	Rideau R. at Sussex Drive Bridge east channel
54	00QU02LA0003	Brewery Creek downstream of footbridge near Hwy 148
55	00QU02LH0036	Gatineau R. downstream of Hwy 148 50 metres off pier
56	00QU02LH0037	Gatineau R. downstream of Hwy 148, 50 metres off log boom
57	00ØN02LB0014	Green's Creek 25 metres upstream from confluence with Ottawa R.

PROJECT TITLE: TESTING AND PERFORMANCE EVALUATION OF THE AQUEOUS PHASE LIQUID EXTRACTOR (APLE) SYSTEMS

NATIONAL PROGRAM NAME ECS CODE 4.1: TOXIC CHEMICALS

STUDY TEAM: R. McCREA & J. FISCHER

GOALS:

1) To set up a system for the continuous collection of suspended sediment and large volume aqueous phase samples integrated on a weekly basis at the Niagara-on-the-Lake monitoring station.

2) A report detailing the construction and operation of the APLE in continuous application based on field trial conducted at Niagara-on-the-Lake will be prepared in the next fiscal year.

RATIONALE:

To develop extraction systems which are capable of extracting trace organic contaminants from large volumes of water samples, effectively reducing the detection limit over traditional sampling methods.

DESCRIPTION:

Suspended sediment and large volume aqueous phase samples integrated on a weekly basis will be collected at NOTL to evaluate the long term performance of the APLE in this continuous application. The aqueous phase samples will be extracted on site after each sampling period. During this trial, several samples will be fortified with C^{13} organochlorine contaminant spiking solutions to verify the precision and accuracy of these field extractions.

RESOURCES ($'000) 1984/85

ACCEPTABLE ANALYSIS TURNAROUND TIME 3 months

	Total
PY TECH. PROF.	
TOTAL PY	0.6
SALARIES	18.0
O&M	3.5
CONTRACTS	4.5
CAPITAL	-
TOTAL $	26.0

PROJECT TITLE:
NORTHERN BASELINE ECOSYSTEM-CONTAMINANT STUDY

NATIONAL PROGRAM NAME ECS CODE 4.1: TOXIC CHEMICALS

STUDY TEAM: R. McCREA & J. FISCHER

GOALS:

(i) A report detailing the distribution of organochlorine pesticides and PCB's in the Moose River estuary and headwater bog pools will be prepared with G. Wickware, CFS, GLFRC and submitted for publication by March 1985.

(ii) A final draft of a report on the chemical forms and potential availability of trace metals in bottom sediment of the major rivers of the Hudson Bay Lowland will be prepared with Dr. K. Lum, NWRI and submitted for publication by October 1984.

(iv) A preliminary report detailing the fate and potential impact of particulate bound trace metals as a result of esturine mixing will be prepared with Dr. K. Lum, NWRI by March 1985.

RATIONALE:

This study will provide detailed information on the distribution and fate of organochlorine pesticides, PCB's and trace metals in the major river basins of the Hudson Bay Lowland necessary for assessing environmental impacts.

DESCRIPTION: Considerable time and effort will be spent preparing figures and graphs as well as report writing (GOALS 1, 2 & 3).

RESOURCES ($'000) 1984/85

	Total
PY TECH.	
PROF.	
TOTAL PY	0.7
SALARIES	22.5
O&M	3.6
CONTRACTS	-
CAPITAL	-
TOTAL $	26.1

PROJECT DESCRIPTION
WATER QUALITY BRANCH - 1984/85

REGION/HQ Ontario
PROJECT NO: WQ-08

PROJECT TITLE:
NORTHWESTERN ONTARIO NETWORK

NATIONAL PROGRAM NAME ECS CODE 1.1: CANADA/U.S. AND INTERJURISDICTIONAL WATER MANAGEMENT

STUDY TEAM: J. Merriman & Technician

GOALS:
To maintain the Water Quality Network for four stations in Northwestern Ontario. Prepare a draft report on water quality conditions at these stations by March 1985. Fulfill duties as required as member of the Rainy River Study Plan Workgroup.

RATIONALE:
The rivers are of international and interprovincial significance. Monitoring water quality conditions on these interjurisdictional waters will provide long term data base for future reference.

DESCRIPTION:
Four locations on the Rainy, English and Winnipeg Rivers will be sampled bi-weekly by local collectors for physical parameters, major ions, nutrients and metals. Sampling for Oc's, PCB's will be done on a monthly basis.

A draft report on previous years data will be completed by March 1985.

Data generated by the laboratory will be edited and entered into NAQUADAT at CCIW.

RESOURCES ($'000) 1984/85

ACCEPTABLE ANALYSIS TURNAROUND TIME 90 days

	Total
PY TECH.	
PROF.	
TOTAL PY	0.5
SALARIES	15.5
O&M	4.7
CONTRACTS	1.2
CAPITAL	-
TOTAL $	21.4

Map No.	NAQUADAT No.	Station Location
		North Western Ontario Network
5	00ØN05PC0002	Rainy River at outlet of Rainy Lake
6	00ØN05PD0001	Rainy River near outlet at Lake of the Woods
7	00ØN05PE0002	Winnipeg River at Whitedog Falls Generating Station
8	00ØN05QE0002	English River at Caribou Falls Generating Station

PROJECT DESCRIPTION
WATER QUALITY BRANCH - 1984/85

REGION/HQ Ontario
PROJECT NO: WQ- 09

PROJECT TITLE:
ORGANICS IN ATMOSPHERIC PRECIPITATION

NATIONAL PROGRAM NAME ECS CODE 4.1: TOXIC CHEMICALS

STUDY TEAM: C.H. CHAN, L. PERKINS

GOALS:

To develop a sampling methodology for analyzing trace organics in atmospheric precipitation.

To obtain a semi-qualitative basis, the levels of toxic contaminants in wet deposition.

RATIONALE:

To fulfill Canada's surveillance and monitoring on input of toxic substances as outlined in 1978 Canada/US Agreements on Great Lakes Water Quality.

DESCRIPTION: This is the 2nd year of an on-going program to develop sampling methodology for analyz ing trace organics in atmospheric precipitation.A prototype organic precipitation collector has been developed for year round operation. Further modification and development work may be necessary to ensure smooth operation under harsh winter conditions. This task will be carried out in consultation with NWRI engineering section.

Two organic precipitation samplers have been in operation in Lake Superior for 16 months. If results from these two samplers prove to be satisfactory, two more additonal samplers will be installed in the lower Great Lakes by Dec. 1984.

RESOURCES ($'000) 1984/85

ACCEPTABLE ANALYSIS TURNAROUND TIME 90 days

	Total
PY TECH. PROF.	0.3
TOTAL PY	9.5
SALARIES	5.0
O&M	-
CONTRACTS	-
CAPITAL	
TOTAL $	14.8

PROJECT DESCRIPTION
WATER QUALITY BRANCH - 1984/85

REGION/HQ Ontario
PROJECT NO: WQ-10

PROJECT TITLE:

NORTHERN BASELINE NETWORK

NATIONAL PROGRAM NAME ECS CODE 4.3 Environmental Assessment and Baseline Studies

STUDY TEAM: R. McCrea & J. Fischer

GOALS:

To establish baseline conditions in the water chemistry and to ascertain the degree of persistent contaminants present in Ontario's arctic watershed.

RATIONALE:

To determine baseline water quality conditions, monitor new and persistent contaminants and provide a data base suitable for determining the impact of future developments in the Hudson Bay Lowland.

DESCRIPTION:

Water quality sampling will be conducted near the mouths of the Severn, Winisk, Attawapiskat, Albany and Moose rivers. All stations will be sampled on approximately a bi-weekly basis (except during Spring run-off and Fall freeze-up) by lay collectors for the analyses of physical parameters, major ions, and trace metals. Samples for organochlorine pesticides and PCB's will be collected on a monthly basis.

RESOURCES ($000's) 1984/85

ACCEPTABLE ANALYSIS TURNAROUND TIME 90 days

	Total
PY TECH.	
PROF.	
TOTAL PY	0.3
SALARIES	8.5
O&M	1.5
CONTRACTS	5.5
CAPITAL	-
TOTAL $	15.5

Map No.	NAQUADAT No.	Station Location
		Northern Baseline
9	00Ø04BA0010	Severn River just upstream of Fort Severn
10	00Ø04DC0010	Winisk River just upstream of Winisk
11	00Ø04FC0010	Attawapiskat River just upstream of Attawapiskat
12	00Ø04HA0010	Albany River just downstream of Fort Albany (South channel)
13	00Ø04KA0010	Moose River (West) West channel upstream of Moosonnee
14	00Ø04KA0011	Moose River (East) East channel upstream of Moosonee

All of the above stations are sampled bi-weekly

PROJECT DESCRIPTION
WATER QUALITY BRANCH - 1984/85

REGION/HQ Ontario
PROJECT NO: WQ-11

PROJECT TITLE: PRECIPITATION CHEMISTRY NETWORK

NATIONAL PROGRAM NAME ECS CODE 1.1
CANADA/US & INTERJURISDICTIONAL WATER MANAGEMENT

STUDY TEAM: C.H. Chan & L.H. Perkins

GOALS:

To provide long term records of chemical composition of atmospheric deposition and to provide estimates and material loading to the Great Lakes.

RATIONALE:

To fulfill Canada's surveillance and monitoring activities on atmospheric inputs as outlined in the Canada/US Agreements on Great Lakes Water Quality 1978.

DESCRIPTION:

This is an on-going program on Great Lakes Atmospheric Deposition.

Work outline for this year is to maintain and upgrade the network by adapting sampling protocol similar to CAPMON thus facilitating data comparison.

To participate in IJC Work Groups and provide input into atm ospheric component of the various lake task forces.

RESOURCES ($'000) 1984/85

ACCEPTABLE ANALYSIS TURNAROUND TIME 90 days

	Total
PY TECH. PROF.	1.0
TOTAL PY	27.0
SALARIES	5.0
O&M	12.0
CONTRACTS	6.0
CAPITAL	
TOTAL $	50.0

Map No.	NAQUADAT No.		Station Location
			Precipiation Network
15	A.A.P.S.	33ØNO2ACO7ØØ Wet	Squaw Bay on Mrs. June Huston
	A.A.P.S.	33ØNO2ACO1ØØ Bulk	Property, Sibley Peninsula, (Organic)
16	A.A.P.S.	33ØNO2BFO7Ø1 Wet	Sault Ste. Marie at airport
		33ØNO2BFO1Ø1 Bulk	near the weather office
17	A.A.P.S.	33ØNO2CGO7Ø1 Wet	South Baymouth research station,
	A.A.P.S.	33ØNO2CGO1Ø1 Bulk	Tehkummah Manitoulin Island
18	A.A.P.S.	33ØNO2FAO7ØØ Wet	Wiarton airport near the weather
		33ØNO2FAO1ØØ Bulk	office
19	A.A.P.S.	33ØNO2FEO7ØØ Wet	Goderich pollution control plant
	A.A.P.S.	33ØNO2FAO1ØØ Bulk	
20	A.A.P.S.	33ØNO2GHO7ØØ Wet	Pelee Island airport near weather
	A.A.P.S.	33ØNO2GHO1ØØ Bulk	station
21	A.A.P.S.	33ØNO2GCO7Ø1 Wet	Long Point, at the mouth of Big Creek
	A.A.P.S.	33ØNO2GCO1Ø1 Bulk	Moniteq Trailer Park Port Royal
22	A.A.P.S.	33ØNO2HAO7ØØ Wet	Niagara-on-the-Lake at daily sampling
	A.A.P.S.	33ØNO2HAO1ØØ Bulk	Trailer Located at the mouth of the Niagara River
23	A.A.P.S.	33ØNO2HBO7Ø5 Wet	Burlington, at a Halton Regional
	A.A.P.S.	33ØNO2HBO1Ø5 Bulk	pumping station on Waterdown Road
25	rain	33ØNO2HCO1Ø1 Bulk	Woodbridge at the meteorological
	A.A.P.S.	33ØNO2HCO7Ø1 Wet	research station on Weston Road & Hwy. 7
26	A.A.P.S.	33ØNO2HKO7ØØ Wet	Trenton Armed Forces Base near
	A.A.P.S.	33ØNO2HKO1ØØ Bulk	weather station
24		33ØNO2BAO7Ø2 Wet	Rossport North Shore of Lake Superior
		33ØNO2BAO1Ø2 Bulk	on the Property of Mrs. Molinski
27		33ØNO2BDO7Ø1 Wet	Wawa East Shore of Lake Superior
		33ØNO2BDO1Ø1 Bulk	on the Property of Brad Buck
28		33ØNO2BFO7Ø2 Wet	Turkey Lake Batchawana Mountain Met. Platform at LRTAP calibrated watershed 40 miles north of Sault St Marie. (Organic)

PROJECT DESCRIPTION
WATER QUALITY BRANCH - 1984/85

REGION/HQ Ontario
PROJECT NO: WQ- 12

PROJECT TITLE:

SUPPORT NETWORK

NATIONAL PROGRAM NAME ECS CODE 4.3 Environmental Assessment and Baseline Studies

STUDY TEAM: L. PERKINS

GOALS:

1- To oversee and arrange the collection of water quality samples at three locations during 1984-85, and to keep NAQUADAT files up to date.

RATIONALE:

This sampling is carried out in support of Water Survey of Canada, and the Global Environmental Monitoring System.

DESCRIPTION:

Water Quality samples will be collected at three locations in Ontario.

1) North Magnetawan River (above Pickerel Lake) — Water Survey of Canada bench mark stations

2) Goulais River (near Searchmount) — (Approx. every 4-6 weeks)

3) St. Clair River at mouth of Lake Huron.- Sampling on a monthly basis at water intake for GEMS.

RESOURCES ($'000) 1984/85

ACCEPTABLE ANALYSIS TURNAROUND TIME 90 days

	Total
PY TECH. PROF.	
TOTAL PY	0.1
SALARIES	2.5
O&M	3.0
CONTRACTS	-
CAPITAL	-
TOTAL $	5.5

Map No.	NAQUADAT No.	Station Location	
		Support Network	
29	00ØN92BF0001	Goulais River near Searchmont	Water Resources Branch Benchmark Station
30	00ØN02EA0001	Magnetewan River above Pickerel Lk.	Water Resources Branch Benchmark Station

PARAMETERS:

samples for: major ions, physical parameters, silica, TP, TKA and DOC. (approx. every 4 to 6 weeks)

		Gems Stations	
31	010N02IH0101	Lake Huron at Sarnia Raw Water Intake	Monthly

PROJECT DESCRIPTION
WATER QUALITY BRANCH - 1984/85

REGION/HQ Ontario
PROJECT NO: WQ-13

PROJECT TITLE:
IDENTIFICATION OF NEW ORGANIC CONTAMINANTS IN THE NIAGARA RIVER USING SPOTTAIL SHINERS

NATIONAL PROGRAM NAME ECS CODE 1.1
CANADA-US AND INTERJURISDICTIONAL WATER MANAGEMENT

STUDY TEAM: K.W. Kuntz

GOALS:

To identify new contaminants found in the spottail shiners of the Niagara River as potential emerging problems in the Lake Ontario ecosystem.

To determine trends and sources of toxic contaminants in the Niagara River using spottail shiners as a biological monitor and an early warning system.

RATIONALE:

In support of GLISP, to fulfill Canada's surveillance and monitoring requirememts on the Interconnecting Channels for toxic substances as outlined in Annex 12 of the 1978 GLWQA.

DESCRIPTION:

Spottail shiners will be collected at approximately ten stations throughout the Niagara River system in mid to late September, 1984. These biological monitors will be used to measure year to year variations as well as spatial distributions of toxic contaminants in the Niagara River. Source identification and new chemicals of concern may also be detected before they would be detected in water.

RESOURCES ($'000) 1983/84

ACCEPTABLE ANALYSIS TURNAROUND TIME 90 days (by Jan. 1985)

	Total
PY TECH.	
PROF.	
TOTAL PY	0.1
SALARIES	3.5
O&M	1.0
CONTRACTS	-
CAPITAL	1.0
TOTAL $	5.5

PROJECT DESCRIPTION
WATER QUALITY BRANCH - 1984/85

REGION/HQ Ontario
PROJECT NO: WQ-14

PROJECT TITLE:

OFFSHORE SURVEILLANCE & ANALYSIS: ORGANIC CONTAMINANTS IN LAKE ONTARIO

NATIONAL PROGRAM NAME ECS CODE 1.1 CANADA-US AND INTERJURISDICTIONAL WATER MANAGEMENT

STUDY TEAM: R. Stevens, M. Neilson, D. Warry

GOALS:

1) Interpretation of results of preliminary (June 83) cruise for organic contaminants and full scale cruise (Oct. 83) results.

2) Preparation of report summarizing findings by December 1984.

RATIONALE:

To fulfill Canada's commitments for surveillance and monitoring under the Canada/US Great Lakes Water Quality Agreement and for the provision of data and assistance to the International Joint Commission.

DESCRIPTION:

Two cruises were conducted in 1983 to collect samples for organic contaminants analysis - a preliminary cruise to evaluate collection methodology and a full scale (15 station) cruise in Lake Ontario to investigate spatial distribution of contaminants. Results from these two studies will be interpreted and a report summarizing the findings will be published

RESOURCES ($'000) 1984/85

ACCEPTABLE ANALYSIS TURNAROUND TIME

	Total
PY TECH. PROF.	
TOTAL PY	0.3
SALARIES	10.5
O&M	2.0
CONTRACTS	-
CAPITAL	-
TOTAL $	12.5

PROJECT DESCRIPTION — REGION/HQ: Ontario
WATER QUALITY BRANCH - 1984/85 — PROJECT NO: WQ-15a

PROJECT TITLE: WATER QUALITY MONITORING OF THE OTTAWA RIVER

NATIONAL PROGRAM NAME ECS CODE 4.1: - TOXIC CHEMICALS

STUDY TEAM: R. McCrea and J. Fischer

GOALS:

1) To establish a water quality monitoring station on the Ottawa River, within the National Capital Region, suitable for the collection of samples on a daily basis (Sept. 1984).

2) To select potential water quality monitoring stations in impacted reaches of the Ottawa River (Oct. 1984)

RATIONALE:

To provide comprehensive water quality data sets suitable for establishing spatial and temporal trends, compliance with water quality objectives as well as an estimation of loadings of major ions, nutrients, trace metals and trace organic contaminants in the Ottawa River.

DESCRIPTION:

In order to establish a monitoring station (Goal 1), considerable time and effort will be spent selecting an appropriate sampling site, modifying and installing a trailer on site. In addition, the assistance of service groups will be required to modify, construct and install various sampling equipment.

A review of water quality and suspended sediment data will be undertaken to aid in the selection of potential monitoring stations (Goal 2)

RESOURCES ($'000) 1984/85

ACCEPTABLE ANALYSIS TURNAROUND TIME 2 mon.

	Total
PY TECH. PROF.	
TOTAL PY	0.4
SALARIES	11.3
O&M	12.6
CONTRACTS	-
CAPITAL	5.0
TOTAL $	28.9

Map No.	NAQUADAT No.	Station Location
33	00ØN02LA2652 00ØN02LA9381	Ottawa R. at Lemieux Island

PROJECT DESCRIPTION
WATER QUALITY BRANCH - 1984/85

REGION/HQ Ontario
PROJECT NO: WQ- 15b

PROJECT TITLE:

OTTAWA RIVER TOXIC CHEMICALS MONITORING

NATIONAL PROGRAM NAME ECS CODE 4.1: TOXIC CHEMICALS

STUDY TEAM: John Merriman

GOALS: To coordinate work being done by both WQB, Ont. Region and WQB-Quebec Region in the Carillon Region.

Collect fish samples in September in the vicinity of Carillon for analyses of trace contaminants.

RATIONALE: There is very little data available on trace contaminants in the Ottawa River basin. This project, in conjunction with others undertaken by Ontario and Quebec Regions, will provide a more comprehensive data base on contaminants.

DESCRIPTION: One survey will be completed by October in the vicinity of Carillon in conjunction with WQB-Quebec Region. Spottail shiners or young of the year perch will be collected and analyzed for trace organic contaminants and metals. Data will be examined in relation to other water and sediment data collected in the area.

RESOURCES ($'000) 1983/84

ACCEPTABLE ANALYSIS TURNAROUND TIME 90 days

	Total
PY TECH. PROF.	
TOTAL PY	0.2
SALARIES	5.7
O&M	2.0
CONTRACTS	4.0
CAPITAL	1.0
TOTAL $	12.7

PROJECT DESCRIPTION
WATER QUALITY BRANCH - 1984/85

REGION/HQ Ontario
PROJECT NO: WQ-16

PROJECT TITLE:

LAKE HURON SURVEILLANCE

NATIONAL PROGRAM NAME ECS CODE 1.1 CANADA - U.S. AND INTERJURISDICTIONAL WATER MANAGEMENT

STUDY TEAM: R. Stevens, M. Neilson, N.D. Warry & Technical Assistant

GOALS:

1) Presentation of paper on Georgian Bay/North Channel Water Quality at IAGLR, May /84
2) Chair Lake Huron Task Force
3) Review zonation pattern and document findings in conjunction with Lake Ontario study by May 1985.
4) Completion of one cruise in May 1984.

RATIONALE:

To fulfill Canada's commitment for surveillance and monitoring under the Canada-US Great Lakes Water Quality Agreement and for the provision of data and assistance to the International Joint Commission.

DESCRIPTION:

R. Stevens has been invited to present a paper on Georgian Bay/North Channel at IAGLR conference in May 1984.

Multivariate statistical procedures developed in 1983 will be used to rezone Lake Huron, Georgian Bay and the North Channel and the new zones will be incorporated into the ALDAR program.

The annual component of the Lake Huron Surveillance Program will include one Spring cruise in May, 1984 monitoring approx. 100 stations for an extensive series of parameters.

Special study efforts will likely include task force participation.

RESOURCES ($'000) 1983/84

ACCEPTABLE ANALYSIS TURNAROUND TIME 60 d.

	Total
PY TECH.	
PROF.	
TOTAL PY	0.5
SALARIES	17.5
O&M	3.8
CONTRACTS	-
CAPITAL	-
TOTAL $	21.3

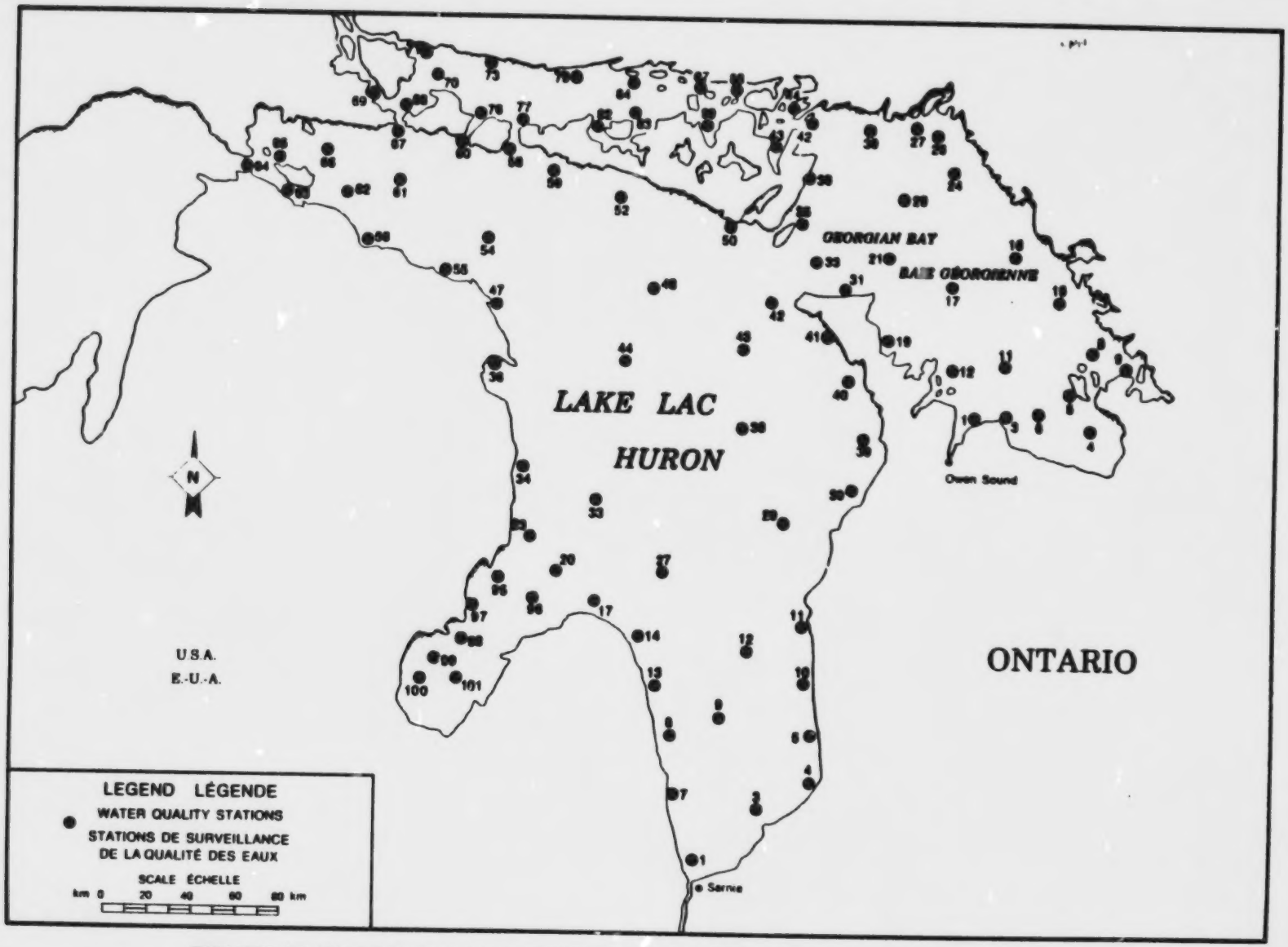


FIGURE 10 WATER QUALITY BRANCH MONITORING STATIONS 1984-85
STATIONS DE SURVEILLANCE DE LA DIRECTION DE LA QUALITÉ
DES EAUX 1984-85

SAMPLING STATIONS

LAKE HURON

1984

STATION NUMBER	LATITUDE N.	LONGITUDE W.
1	43° 05' 24"	82° 23' 33"
3	43° 15' 24"	82° 02' 17"
4	43° 19' 32"	81° 47' 17"
5	43° 32' 54"	81° 44' 38"
7	43° 20' 32"	82° 30' 22"
8	43° 34' 01"	82° 29' 05"
9	43° 37' 59"	82° 13' 06"
10	43° 45' 18"	81° 46' 56"
11	43° 57' 29"	81° 47' 10"
12	43° 53' 28"	82° 03' 26"
13	43° 45' 14"	82° 34' 08"
14	43° 56' 34"	82° 40' 02"
17	44° 06' 02"	82° 52' 02"
20	44° 13' 01"	83° 05' 00"
23	44° 20' 01"	83° 17' 57"
27	44° 11' 50"	82° 30' 14"
29	44° 21' 29"	81° 46' 57"
30	44° 28' 09"	81° 26' 54"
33	44° 30' 00"	82° 49' 57"
34	44° 38' 26"	83° 14' 00"
36	45° 02' 08"	83° 22' 42"
/*	44° 44' 26"	82° 03' 39"
39	44° 39' 26"	81° 22' 35"
40	44° 53' 52"	81° 26' 13"
41	45° 04' 59"	81° 32' 19"
42	45° 13' 19"	81° 49' 15"
43	45° 00' 51"	82° 00' 29"
44	45° 00' 55"	82° 41' 08"
47	45° 15' 21"	83° 20' 51"
48	45° 16' 39"	82° 27' 02"
50	45° 32' 06"	82° 02' 48"
52	45° 39' 06"	82° 39' 06"
54	45° 31' 01"	83° 24' 54"
55	45° 23' 32"	83° 39' 10"
56	45° 31' 13"	84° 05' 00"

STATION NUMBER		LATITUDE N.	LONGITUDE W.
58		45° 52' 04"	83° 16' 00"
59		45° 46' 00"	83° 01' 43"
60		45° 54' 00"	83° 31' 07"
61		45° 45' 03"	83° 54' 58"
62		45° 40' 34"	84° 11' 12"
63		45° 42' 14"	84° 30' 37"
64		45° 48' 30"	84° 45' 36"
65		45° 50' 48"	84° 34' 00"
66		45° 51' 50"	84° 17' 42"
67		45° 51' 06"	83° 54' 00"
68		46° 02' 28"	83° 51' 11"
69		46° 04' 43"	84° 01' 42"
70		46° 08' 10"	83° 40' 15"
71		46° 13' 58"	83° 44' 44"
73		46° 11' 18"	83° 21' 12"
76		45° 59' 00"	83° 26' 17"
77		45° 58' 07"	83° 11' 57"
79		46° 07' 24"	82° 53' 09"
82		45° 56' 20"	82° 45' 30"
83		46° 00' 01"	82° 32' 48"
84		46° 05' 31"	82° 33' 26"
87		46° 03' 36"	82° 10' 42"
88		46° 03' 23"	81° 59' 45"
89		45° 55' 00"	82° 09' 45"
95		44° 12' 46"	83° 22' 13"
96		44° 07' 36"	83° 10' 20"
97		44° 06' 58"	83° 31' 46"
98		43° 58' 34"	83° 34' 30"
99	Saginaw Bay	43° 54' 30"	83° 44' 28"
100		43° 49' 27"	83° 49' 03"
101		43° 49' 18"	83° 37' 28"

SAMPLING STATIONS

GEORGIAN BAY

1984

STATION NUMBER	LATITUDE N.	LONGITUDE W.
1	44° 42' 56"	80° 51' 26"
3	44° 43' 34"	80° 36' 49"
4	44° 38' 43"	80° 09' 53"
5	44° 47' 48"	80° 14' 33"
6	44° 44' 16"	80° 26' 08"
8	44° 57' 15"	80° 08' 03"
9	44° 52' 19"	79° 57' 58"
11	44° 55' 10"	80° 36' 16"
12	44° 55' 12"	80° 52' 30"
15	45° 10' 00"	80° 17' 53"
16	45° 21' 12"	80° 29' 03"
17	45° 14' 40"	80° 52' 24"
19	45° 03' 59"	81° 15' 12"
21	45° 21' 50"	81° 11' 16"
24	45° 40' 45"	80° 50' 21"
26	45° 49' 56"	80° 53' 53"
27	45° 51' 53"	80° 59' 53"
29	45° 34' 59"	81° 05' 06"
31	45° 34' 20"	81° 26' 30"
33	45° 22' 13"	81° 35' 06"
35	45° 31' 39"	81° 40' 12"
36	45° 42' 36"	81° 37' 15"
39	45° 52' 27"	81° 15' 30"
42	45° 54' 50"	81° 35' 42"

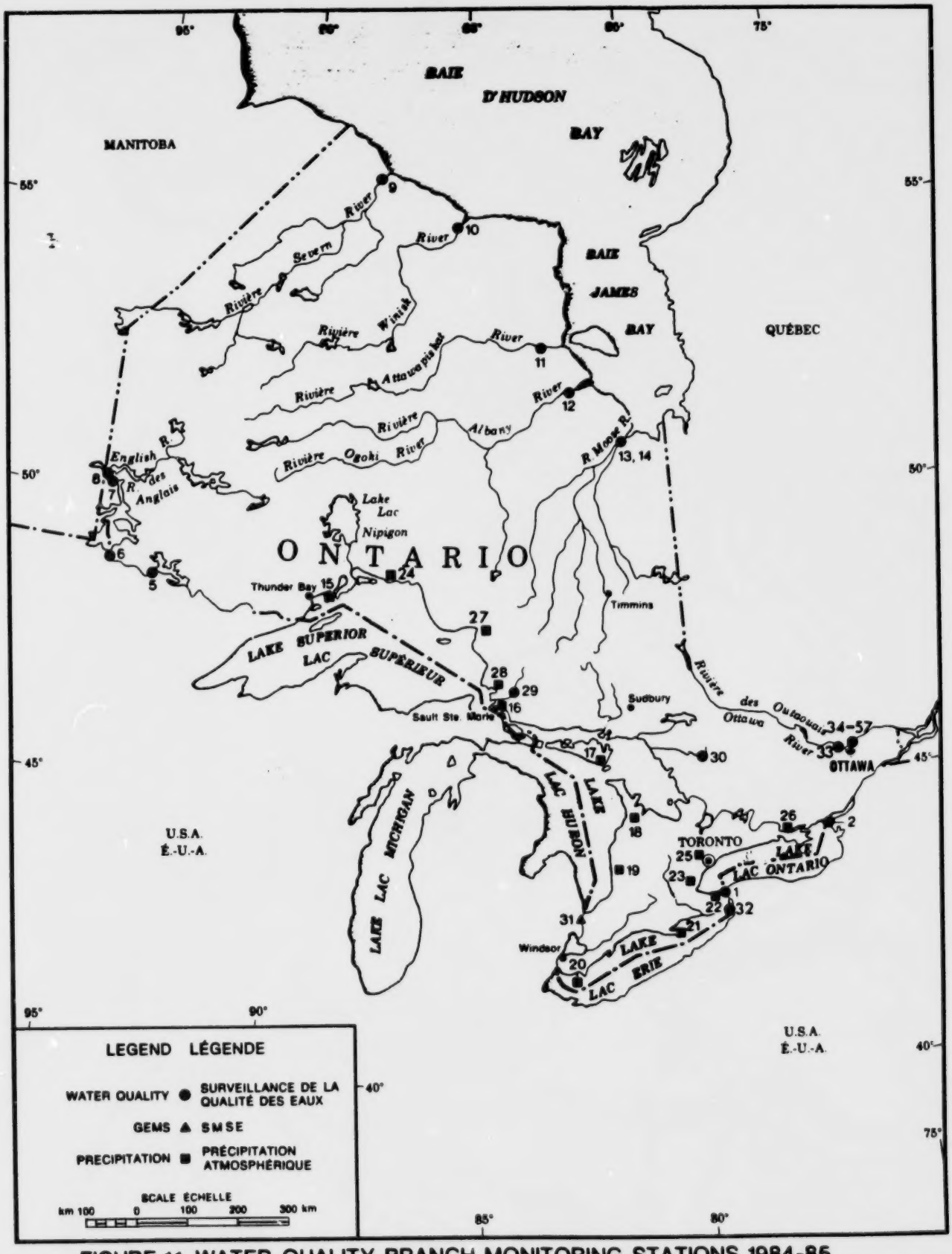


FIGURE 11 WATER QUALITY BRANCH MONITORING STATIONS 1984-85
STATIONS DE SURVEILLANCE DE LA DIRECTION DE LA QUALITÉ DES EAUX 1984-85

D.4 WESTERN AND NORTHERN REGION

Région de l'Ouest et du Nord

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
301-84 Interjurisdictional Monitoring by WRB

ECS PROGRAM - 1.3* - Water Quality Management Data
DURATION - Ongoing

OBJECTIVES
To conduct monthly or time of visit water quality surveys at designated interjurisdictional locations; to prepare the data collected from these sites for the detailed data and water quality interpretive reports.

RATIONALE
This project contributes to the administration of the Boundary Waters Treaty of 1909 by making available, water quality data obtained at three border locations on remote interjurisdictional river systems. As well, samples are collected at major remote interprovincial rivers.

DESCRIPTION
Monthly or time of visit samples are collected for a wide spectrum of parameters. The governments concerned are notified of potential and real problems. Depending on the magnitude of the problem, External Affairs may be notified. The data are reviewed on an annual basis to assess the relative quality of the boundary streams.

COORDINATOR(S) - Block (Alta.) Chacko (Man.) Crosley (Sask.)

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof		0.01	0.04	0.01	0.06
	PY Tech	0.11	0.07	0.07		0.25
	Salary	2.21	2.17	3.80	0.40	8.58
	O & M	1.50	1.24	3.90	0.50	7.14
	Capital	0.71	0.58	3.70		4.99
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total		0.11	0.08	0.11	0.01	0.31
Total Dollars		4.42	3.99	11.40	0.90	20.71

* Affiliated ECS Program(s) - 1.1

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
301-84 Interjurisdictional Monitoring by WRB

STATION LIST

Map no.	Station location	NAQUADAT no.	Sampling frequency
52	Battle Creek near International Boundary	00SA11AB0005	M
53	Frenchman River at the 49th Parallel	00SA11AC0002	M
54	Lodge Creek near Willow Creek	00SA11AB0007	M
59	Nelson River near mouth of Weier River	00MA05UH0001	V
60	Hayes River below Junction with God's River	00MA04AB0001	V
61	Churchill River above Red Head Rapids	00MA06FD0002	V
62	Cochrane River near Brochet Manitoba	00MA06DA0001	V

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
304-84 Interjurisdictional Monitoring by WQB

ECS PROGRAM - 1.3* - Water Quality Management Data
DURATION - Ongoing since 1978

OBJECTIVES
To report on the water quality at the interjurisdicational stations and to provide data for the administration of the Boundary Waters Treaty and Federal/Provincial Water Management programs.

RATIONALE
The Water Quality Branch contributes to the administration of the Boundary Waters Treaty of 1909 by making available water quality data obtained at border locations of international river systems.

DESCRIPTION
Samples are collected monthly for a wide variety of parameters from 23 interjurisdictional stations. The data are verified before dissemination. Unusual values are followed up with re-surveys. The governments concerned are notified of potential and real problems. Depending on the magnitude of the international concerns, External Affairs may be notified. The data are reviewed collectively, and by station, on an annual basis for publication. Instrument evaluation and field method development are also carried out.

COORDINATOR(S) - Block (Alta & NWT), Chacko (Man), Crosley (Sask)

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof		0.06	0.67		0.73
	PY Tech	1.65	0.65	1.26		3.56
	Salary	33.08	19.75	67.10		119.93
	O & M	22.49	12.00	24.00		58.49
	Capital	10.58	5.65	7.00		23.23
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total		1.65	0.71	1.93		4.29
Total Dollars		66.15	37.40	98.10		201.65

* Affiliated ECS Program(s) - 1.1

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
304-84 Interjurisdictional Monitoring by WQB

STATION LIST

Map no.	Station location	NAQUADAT no.	Sampling frequency
1	Milk River at Eastern Crossing of International Boundary	00AL11AA0003	M
2	Milk River at Western Crossing of International Boundary	00AL11AA0002	M
3	North Milk River at International Boundary	00AL11AA0001	M
4	St. Mary's River near International Boundary	00AL05AE0001	M
5	Belly River at Highway # 6	00AL05AD0060	M
6	Waterton River at Highway # 6	00AL05AD0005	M
7	East Poplar River at International Boundary	00SA11AE0008	M
8	Long Creek South of Torquay	00SA05NA0002	M
9	Long Creek near Noonan	00US05NB0001	M
10	Souris River near Glen Ewen	00SA05ND0001	M
11	Antler Creek at Highway # 251	00MA05NF0009	M
12	Souris River at Coulter	00MA05NF0001	M
13	Badger Creek near Cart wright	00MA05DA0003	M
14	Pembina River at Windygate	00MA05DB0001	M
16	Roseau River at Gardenton	00MA05DD0001	M
17	Pine Creek Diversion at Highway # 89	00MA05DD0012	M
18	Gainsborough Creek at Hwy 83	00MA05NF0005	M
19	Pipestone Creek at Highway 255	00MA05NQ0013	M
20	Winnipeg River at Pointe du Bois	00MA05PF0022	M
21	Manigotagan River at Highway 304	00MA05RA0004	M
56	Swan River at Highway # 10	00MA05LE0002	M
57	Woody River at Highway # 10	00MA05LE0003	M
58	Overflowing River at Highway #	00MA05LD0001	M

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
305-84 Benchmark Basins Monitoring by WQB

ECS PROGRAM - 1.3 - Water Quality Management Data
DURATION - Ongoing since April 1980

OBJECTIVES
To conduct water quality surveys of Brewster Creek; to prepare the data for inclusion in detailed and interpretive reports.

RATIONALE
At the request of the Regional Director of IWD, sampling has been carried out to characterize the quality of benchmark streams.

DESCRIPTION
This project was discontinued during FY 83/84 in an effort to reduce the analytical requirements of the Branch during the relocation of its laboratory

The water quality parameters monitored are: major ions, bacteriological parameters, nutrients, metals, physical tests and chlorophyll "A". The data are verified for inclusion in data reports.

COORDINATOR(S) - Block

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	TOTALS
A Base	PY Prof			0.03		0.03
	PY Tech	0.02	0.03	0.08		0.13
	Salary	0.31	0.71	3.50		4.52
	O & M	0.21	0.48	1.92		2.61
	Capital	0.10	0.23	0.98		1.31
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total		0.02	0.03	0.11		0.16
Total Dollars		0.62	1.42	6.40		8.44

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
305-84 Benchmark Basins Monitoring by WQB

STATION LIST

Map no.	Station location	NAQUADAT no.	Sampling frequency
89	Brewster Creek near mouth	OOALO5BB0009	M

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
306-84 International Automatic Water Quality Monitoring

ECS PROGRAM - 1.1 - Interjurisdictional Water Management
DURATION - Ongoing

OBJECTIVES
(1) To provide continuous surveillance of the Red River at the Canada - U.S. border in order to detect and document the effect of any industrial and municipal waste spills and other pollution sources originating in the U.S. (2) To acquire water quality data in order to meet obligation of the Red River Pollution Control Board, IJC.

RATIONALE
Under IJC the Red River monitoring was established in 1968 to provide a continuous surveillance of the water quality at the Canada - U.S. border at Emerson. Since 1977, the potential effect of the Garrison Diversion on the Red River water quality has provided an additional reason for maintaining this monitor.

DESCRIPTION
A Schneider Robot RM25 monitor is operated on a continuous basis on the Red River at Emerson.. Parameters measured are DO, pH, conductivity, chloride and temperature. Data are collected and transmitted using a LaBarge DCP via GOES satellite and stored at Camp Springs, MD. These data are retrieved and decoded by the Branch computer in Regina. Computed monthly data are distributed to various agencies. Monthly samples are also collected to allow monitor to laboratory comparisons, and, to supplement the monthly reports with complete parametric coverage.

COORDINATOR(S) - Chacko

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof			0.15		0.15
	PY Tech	0.13	0.03	0.35		0.51
	Salary	2.61	0.81	17.20		20.62
	O & M	1.77	0.55	6.50		8.82
	Capital	0.83	0.26	2.00		3.09
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total		0.13	0.03	0.50		0.66
Total Dollars		5.21	1.62	25.70		32.53

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
306-84 International Automatic Water Quality Monitoring

STATION LIST

Map no.	Station location	NAQUADAT no.	Sampling frequency
15	Red River at Emerson	00MA05DC0001	M

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
307-84 National Radionuclide Monitoring

ECS PROGRAM - 4.1 - Toxic Chemicals
DURATION - Ongoing since 1980

OBJECTIVES
To measure and assess the significance of radionuclides in waters of federal interest.

RATIONALE
Radiation emitted by radionuclides is harmful to humans, causing damage at both the cellular and molecular levels. The main effect on the individual at low dose levels is the induction of cancer, such as leukemia, while very high dose levels result in death. In addition to somatic changes which affect the individual, genetic changes can also occur which affect the offspring for several generations.

DESCRIPTION
Because of limited field and laboratory resources, samples are composited to make an annual sample for analysis. Four (4) litre samples are collected monthly in polyethylene containers and acidified with 8 ml. concentrated HCL as a preservative. From the 12 monthly samples a composite five (5) litre sample is sent to NWRI annually for analysis.

Stations mointored under this project are included in other projects as follows: Souris River at Coulter and East Poplar River at International Boundary in Project 304-84, Baker Lake 1.6 km from Baker Lake in Project 390-84, Saskatchewan River above Carrot River in Project 315-84, and Red River at Emerson in Project 306-84.

COORDINATOR(S) - Gummer

RESOURCES
N/A

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
308-84 Revised Red River Monthly Report Format

ECS PROGRAM - 1.1 - Interjurisdictional Water Management
DURATION - 1984/85

OBJECTIVES
1 to provide useful, comprehensive monthly data reports for the Red River monitor by placing these data in the context of the historical data

2 to provide direct input to the annual report

RATIONALE
Under the International Joint Commission (IJC) directives, the Branch operates a continuous water quality monitor on the Red River at Emerson. These data must be reported monthly and annually relative to trends and objectives in an effective manner.

DESCRIPTION
At the present time, monthly reports contain only data for a single month. The lack of a historical data reference for these reports frequently causes water quality changes which are consistent with historical patterns to be of concern or alternatively, may result in deviations from the "historical norm" to be unnoticed. This revised report format will provide ready comparison with data from the preceding 11 months as well as the long term patterns. Additionally, the December report will be directly applicable to the monthly report.

COORDINATOR(S) - Gregor, Gillbault

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof			.03		.03
	PY Tech					
	Salary			11.0		11.0
	O & M			7.0		7.0
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total				.03		.03
Total Dollars				18.0		18.0

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
310-84 Canada - Alberta Monitoring Agreement by WQB

ECS PROGRAM - 1.3 - Water Quality Management Data
DURATION - Negotiated Annually

OBJECTIVES
To conduct monthly water quality surveys at selected sites identified under the Agreement; to prepare the data for: monthly reports to Alberta DOE; the Regional ambient water quality data reports, and; the annual report on the quality of the aquatic environment (see Project 304-84).

RATIONALE
The Branch is in the process of negotiating a formal agreement with Alberta Environment to monitor the quality of surface water at twelve locations on a monthly bases during FY 84/85. The Branch anticipates that by January 1985, the Ad-Hoc Agreement will be replaced with a formal federal-provincial water quality Agreement. Discussions regarding the details of this formal Agreement are taking place.

DESCRIPTION
Since 1977 the Branch has annually negotiated an ad-hoc agreement with Alberta Environment. Under the terms of the Ad-Hoc Agreement samples are collected monthly by the Branch and WRB and are analyzed by the Branch. The data are verified and reported to Alberta Environment. The data also support the objectives of the Aquatic Quality Measurement and Assessment Subprogram. Because of federal interest at some sites, the program is cost shared by the two governments.

COORDINATOR(S) - Block

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof		0.03	0.35		0.38
	PY Tech	0.08	0.05	0.84		0.97
	Salary	1.58	2.37	40.90		44.85
	O & M	1.08	0.90	21.00		22.98
	Capital	3.04	2.54	11.30		16.88
Recov.	PY Prof			0.32		0.32
	PY Tech	0.40	0.24	0.76		1.40
	Salary	7.91	6.60	34.96		49.47
	O & M	5.38	4.49	19.18		29.05
	Capital			9.75		9.75
PY Total		0.48	0.32	2.27		3.07
Total Dollars		18.99	16.90	137.09		172.98

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
310-84 Canada - Alberta Monitoring Agreement by WQB

STATION LIST

Map no.	Station location	NAQUADAT no.	Sampling frequency
33	Oldman River at Highway # 36 Bridge	00AL05AG0001	M
34	Oldman River near Lethbridge	00AL05AD0002	M
35	Bow River near the mouth	00AL05BN0001	M
36	Bow River at Cochrane	00AL05BH0017	M
37	Red Deer River at Drumheller	00AL05CE0001	M
38	Red Deer River above Red Deer	00AL05CC0004	M
39	North Saskatchewan River at Devon	00AL05DF0008	M
40	North Saskatchewan River at Pakan Bridge	00AL05EC0005	M
41	Athabasca River at Athabasca	00AL07BE0001	M
42	Smoky River at Watino	00AL07GJ0001	M
43	Peace River at Highway # 2, Dunvegan	00AL07FD0002	M

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
311-84 Canada - Alberta Monitoring Agreement by WRB

ECS PROGRAM - 1.3 - Water Quality Management Data
DURATION - Negotiated Annually

OBJECTIVES
See Project 310-84

RATIONALE
See Project 310-84

DESCRIPTION
Sampling at two sites under the Alberta-Canada Agreement is carried out by WRB. This project is integrally linked to project 310-84. For this reason, the resources of the two projects are presented together in the description for project 310-84. For further information see project 310-84.

COORDINATOR(S) - Block

RESOURCES

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
311-84 Canada - Alberta Monitoring Agreement by WRB

STATION LIST

Map no.	Station location	NAQUADAT no.	Sampling frequency
42	Smoky River at Watino	00AL07QJ0001	M
43	Peace River at Highway # 2, Dunvegan	00AL07FD0002	M

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
312-84 Northern Saskatchewan Monitoring Agreement

ECS PROGRAM - 1.3 - Water Quality Management Data
DURATION - Negotiated Annually

OBJECTIVES
(1) To conduct quarterly water quality surveys at sites identified in the agreement. (2) To prepare quarterly data reports for the Saskatchewan Government.

RATIONALE
The Branch and Saskatchewan DOE both have need of ongoing water quality data for these interjurisdictional river systems. The Saskatchewan and Canadian governments, recognizing an opportunity to reduce monitoring costs in Northern Saskatchewan, have negotiated a cost-sharing agreement.

DESCRIPTION
Samples are collected quarterly from 5 river locations in N. Saskatchewan and analyzed by WQB. Radionuclide samples are collected at 2 of the sites, with analysis done by SRC. In addition, samples of lake water and snow are collected from 28 locations at various times of the year to provide information on LRTAP. Analyses of these samples are performed by SRC. Sites are accessible by air only. During 1984-85, collection will be done by WQB. The data are reviewed and reported quarterly.

COORDINATOR(S) - Crosley

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof		0.01	0.050		0.060
	PY Tech	0.01	0.01	0.075		0.095
	Salary	0.20	0.56	4.400		5.770
	O & M	0.14	0.14	16.000		16.280
	Capital	0.43	0.44	1.000		1.870
Recov.	PY Prof					
	PY Tech	0.06	0.04			0.100
	Salary	1.14	1.17			2.310
	O & M	0.77	0.80			1.570
	Capital					
PY Total		0.07	0.06	0.125		0.255
Total Dollars		3.29	3.11	21.400		27.800

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
312-84 Northern Saskatchewan Monitoring Agreement

STATION LIST

Map no.	Station location	NAQUADAT no.	Sampling frequency
63	Douglas River below confluence with Cluff Creek	00SA07MA0001	Q
64	Fond du Lac River below Black Lake	00SA07LC0001	Q
66	Geike River below junction with Wheeler River	00SA06DA0001	Q
67	Churchill River at Otter Rapids	00SA06CD0001	Q
68	Churchill River near Patuanak	00SA06BB0004	Q

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
313-84 Formalized Water Quality Agreement Development

ECS PROGRAM - 1.3 - Water Quality Management Data
DURATION - Ongoing

OBJECTIVES
To negotiate and develop formalized agreements with the provinces of Manitoba, Saskatchewan and Alberta; to annually review and update these agreements.

RATIONALE
In 1982 Water Quality Branch was directed by the Federal Cabinet to negotiate water quality agreements with the provinces. These agreements will fullfill the needs of both the provinces (data aquisition for management purposes) and the federal government (National Water Quality Assessment).

DESCRIPTION
Negotiations with the province of Alberta commenced in 1983 with a view to replacing the existing ad hoc arrangement (Proects 310, 311) with a formalized agreement. This formalized agreement will contain provisions for the sharing of field and analytical work. As well, other joint activities such as quality control/quality assurance studies, interpretive reporting and sediment and biological surveys will take place. Similar agreements are scheduled to be negotiated with Manitoba (starting in 1984) and Saskatchewan.

COORDINATOR(S) - Gummer, Thomson

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	TOTALS
A Base	PY Prof			1.0		1.0
	PY Tech			0.1		0.1
	Salary			43.2		43.2
	O & M			5.0		5.0
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total				1.1		1.1
Total Dollars				48.2		48.2

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
314-84 National Parks Monitoring Agreement

ECS PROGRAM - 1.3 - Water Quality Management Data
DURATION - Negotiated Annually

OBJECTIVES
To conduct monthly surveys at selected sites within the Rocky Mountain National Parks; to prepare detailed data reports on data obtained in 1980 and 1981; to develop an Agreement with Parks Canada for FY84/85 and 85/86.

RATIONALE
Parks Canada requested that the Branch establish and maintain a water quality network for the purpose of establishing and maintaining a baseline of surface water quality to optimize the use of Park waters. In addition, the Branch has an interest in these data since both the North and South Saskatchewan and the Athabasca Rivers originate in the Parks.

DESCRIPTION
Under the terms of the Agreement the Branch is committed to monthly monitoring for major ions, nutrients, bacteria and metals at five sites (with some IWD interest) in the Rocky Mt. Parks. The project is reviewed annually in cooperation with Parks Canada and is renewable with or without modification. Data are verified on a monthly basis and reported annually to Parks Canada.

COORDINATOR(S) - Block

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof		0.01	0.11		0.12
	PY Tech	0.19	0.09	0.25		0.53
	Salary	3.81	2.90	12.40		19.11
	O & M	2.59	1.73	6.40		10.72
	Capital	1.83	1.22	3.25		6.30
Recov.	PY Prof			0.07		0.07
	PY Tech	0.10	0.05	0.18		0.33
	Salary	1.90	1.27	8.08		11.25
	O & M	1.29	0.86	4.43		6.58
	Capital			2.25		2.25
PY Total		0.29	0.15	0.61		1.05
Total Dollars		11.42	7.98	36.81		56.21

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
314-84 National Parks Monitoring Agreement

STATION LIST

Map no.	Station location	NAQUADAT no.	Sampling frequency
44	Bow River at Highway # 1 above Lake Louise	00AL05BA0011	M
45	Bow River 4.5 Km. above Canmore	00AL05BE0013	M
46	North Saskatchewan River at Whirlpool Point	00AL05DA0001	M
47	Athabasca River at Athabasca Falls	00AL07AA0015	M
48	Athabasca River at Highway # 16 below Snaring River	00AL07AA0023	M

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
315-84 Prairie Provinces Water Board Monitoring

ECS PROGRAM - 1.1* - Interjurisdictional Water Management
DURATION - Ongoing since 1978

OBJECTIVES
To conduct monthly water quality surveys at eleven interprovincial locations.

To prepare monthly detailed data reports for the PPWB.

RATIONALE
The Branch, in order to fulfill its mandate and the terms of an agreement with the Prairie Provinces Water Board, is required to monitor the quality of selected interprovincial rivers.

DESCRIPTION
A total of eleven interprovincial sites are sampled monthly by the branch for a wide spectrum of parameters. The information obtained is verified monthly and reports are prepared for the PPWB. These stations represent river systems in both the Canadian Shield and Plains physiographic regions of the western and northern region.

COORDINATOR(S) - Crosley (Man., Sask.) Block (Alta., NWT.)

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof		0.04	0.80		0.84
	PY Tech	0.20	0.06	0.75		1.01
	Salary	4.05	3.11	56.00		63.16
	O & M	2.76	1.16	21.10		25.02
	Capital	7.86	3.32	10.73		21.91
Recov.	PY Prof					
	PY Tech	1.03	0.32			1.35
	Salary	20.52	8.66			29.18
	O & M	13.95	5.89			19.84
	Capital					
PY Total		1.23	0.42	1.55	0	3.20
Total Dollars		49.14	22.14	87.83		159.11

* Affiliated ECS Program(s) - 1.3, 4.1

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
315-84 Prairie Provinces Water Board Monitoring

STATION LIST

Map no.	Station location	NAQUADAT no.	Sampling frequency
22	South Saskatchewan River at Highway # 41	00AL05AK0001	M
23	Red Deer River near Bindloss	00AL05CK0001	M
24	Beaver River at Beaver Crossing	00AL06AD0001	M
25	Churchill River below Wasawakasik Lake	00SA06EA0003	M
27	Carrot River at Turnberry	00SA05KH0002	M
28	Battle River near Unwin	00SA05FE0001	M
29	Red Deer River near Erwood	00SA05LC0001	M
30	Qu'Appelle River 3.2 Km. South of Welby	00SA05JM0014	M
31	Assiniboine River at Highway # 8 below Kamsack	00SA05MD0002	M
32	Saskatchewan River above Carrot River	00MA05KH0001	M
94	North Saskatchewan River at Lea Park	00AL05EF0001	M

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
316-84 Ducks Unlimited Monitoring Agreement

ECS PROGRAM - 1.1 - Interjurisdictional Water Management
DURATION - Ongoing

OBJECTIVES
To characterize and report on the quality of the inflowing and outflowing surface waters of the Cumberland Marshes Watershed.

RATIONALE
The development and operation of the Cumberland Marshes Ducks Unlimited project has the potential to alter the quality of the Birch and Saskatchewan Rivers which are interprovincial rivers.

DESCRIPTION
The monitoring program consists of twelve annual samples. The sampling frequency is dependant on flow, allowing a general overview of differences in water quality.

In the event that evidence of impacts are observed, intensive surveys will be proposed and funds sought from Ducks Unlimited to substantiate these observations more precisely and accurately, and to identify problem sources with recommendation of measures for the protection of the aquatic environment. This project was initiated by the PPWB and is funded by Ducks Unlimited (Canada).

COORDINATOR(S) - Crosley

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof		0.01	0.06		0.07
	PY Tech			0.04		0.04
	Salary		0.35	3.70		4.05
	O & M			0.50		0.50
	Capital	0.19	0.51			0.70
Recov.	PY Prof					
	PY Tech	0.03	0.06			0.09
	Salary	0.61	1.58			2.19
	O & M	0.41	1.07			1.48
	Capital					
PY Total		0.03	0.07	0.10		0.20
Total Dollars		1.21	3.51	4.20		8.92

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
316-84 Ducks Unlimited Monitoring Agreement

STATION LIST

Map no.	Station location	NAQUADAT no.	Sampling frequency
87	Birch River below Cumberland Marshes Dam	00SA05KH0004	M
88	Dragline Channel below control structure.	00SA05KH0003	M

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
317-84 East Poplar River Bilateral Monitoring Agreement

ECS PROGRAM - 1.1 - Interjurisdictional Water Management
DURATION - Ongoing

OBJECTIVES
To provide ongoing surveillance and an annual description of ground water and surface water quality conditions in the East Poplar River Basin near the International Border and to provide support to a Bilateral Monitoring Committee.

RATIONALE
A Bilateral Monitoring Arrangement has been signed by Canada, Saskatchewan, Montana and the U.S.A. Under the terms of the arrangement, Environment Canada is essentially committed to monthly sampling of the East Poplar River, reporting of surface water data, raising and resolving concerns, preparing reports, reviewing groundwater data, etc. All this is in regards to the Saskatchewan power plant operation near the International Border on the East Poplar River.

DESCRIPTION
Under the terms of the Poplar River Bilateral Monitoring Arrangement, the Branch is committed to: monitoring water quality, maintaining a data base and, upholding other obligations under the Bilateral Agreement.

The resources required for this project have been included in Project 304-84. Refer to Project 304-83 for Sampling Matrix and Analytical Requirements for Station No. 7, East Poplar River at International Boundary.

COORDINATOR(S) - Gummer, Crosley, McNaughton

RESOURCES
N/A

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
320-84 Analytical Support - Alberta Environment

ECS PROGRAM - 1.3 - Water Quality Management Data
DURATION - Ongoing

OBJECTIVES
To assist Alberta Department of Environment in carrying out a study of eutrophication in the S. Saskatchewan River in Alberta by analyzing samples on a full cost recovery basis and by providing advice to Alberta Government personnel.

RATIONALE
Federal-Provincial cooperation is encouraged whenever possible. In this case, the laboratory offers a service on a full cost-recovery basis.

DESCRIPTION
The South Saskatchewan River and its tributaries in Alberta are receiving increasing amounts of effluents from irrigation, municipalities and industry. Already there have been reports of algae problems in the Saskatchewan portion of the Basin. These problems have been attributed to Alberta's activities. Alberta designed and is carrying out a study to quantify the magnitude and effects of the nutrient load in the Basin (TP, TDP, NH3, NO3 + NO2, TN, DN).

Because of the interjurisdicational nature of the problem, Water Quality Branch provided advice on the study design and agreed to carry out the analyses on a full cost recovery basis.

COORDINATOR(S) - J. Gaskin

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof					0
	PY Tech					0
	Salary					0
	O & M					0
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M		10			10
	Capital					
PY Total			0			0
Total Dollars			10			10

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
321-84 Analytical Support - Saskatchewan Environment

ECS PROGRAM - 1.3 - Water Quality Management Data
DURATION - Negotiated Annually

OBJECTIVES
To provide analytical support on a full cost recovery basis to Saskatchewan Department of Environment in their program for monitoring and studying toxic substances.

RATIONALE
The WQB (federal government) is committed to federal- provincial cooperation in water resources management programs.

DESCRIPTION
The Branch has a long history of supporting the work of the Government of Saskatchewan. The withdrawal of the Branch from interprovincial monitoring has left a gap which Saskatchewan has attempted to fill. Saskatchewan has limited capability for analyzing for toxic substances, particularly organics. Because of the precedence and because of the federal interest in toxic substances, the Branch has agreed to support the toxic substances program of Saskatchewan by carrying out analysis on a full cost recovery basis. Costs are recovered in accordance with the National Laboratory Cost Schedule and are estimated to be about $15,000 in FY 84/85. An agreement with complete details is on file.

COORDINATOR(S) - J. Gaskin

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof	0.01	0.01			0.02
	PY Tech	0.05				0.05
	Salary	1.35	0.35			1.70
	O & M					
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M	15.00				15.00
	Capital					
PY Total		0.06	0.01			0.07
Total Dollars		16.35	0.35			16.70

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
322-84 Analytical Support - Miscellaneous

ECS PROGRAM - 1.3 - Water Quality Management Data
DURATION - Ongoing

OBJECTIVES
To provide field and analytical support to pollution surveys as the urgency may require.

RATIONALE
Not all analytical requirements are known in advance. Sampling is sometimes initiated following spills and other pollution events which require laboratory support.

DESCRIPTION
When sampling of pollution events occurs or when unplanned sampling in support of other budgeted projects is conducted, e.g. follow-up pollution verification surveys, the laboratory is contacted regarding its perceived involvement. Work load, sample type, parameter selection, sample turnaround time and reporting requirements are determined in advance of the sample analysis.

COORDINATOR(S) - J. Gaskin

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof		0.01	0.01		0.02
	PY Tech			0.02		0.02
	Salary		0.35	0.90		1.25
	O & M		1.20	1.10		2.30
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total			0.01	0.03		0.04
Total Dollars			1.55	2.00		3.55

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
323-84 Analytical Support - Other Federal Agencies

ECS PROGRAM - 1.3 - Water Quality Management Data
DURATION - Ongoing

OBJECTIVES
To provide field and analytical support to ongoing programs and pollution surveys by other federal agencies as may be required.

RATIONALE
Not all analytical requirments are known in advance. Sampling is sometimes initiated following spills and other pollution events which may require laboratory support. It is Branch policy to provide analytical support to federal agencies but within the restraints of staff and dollars. When necessary, OM costs and salary are recovered.

DESCRIPTION
When sampling of pollution events occurs or when unplanned sampling by other federal agencies is conducted (e.g. follow-up pollution verification surveys) the laboratory may be asked to provide analytical support. Work load, sample type, parameter selection, sample turnaround time and reporting requirements are determined in advance of the sample analysis. Support is also provided to ongoing activities of the federal agencies (CWS, NHRI, NWRI) to assist them in meeting their analytical needs. There is more information regarding support for CWS and NWRI on file.

COORDINATOR(S) - J. Gaskin

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof			0.01		0.01
	PY Tech					0.00
	Salary			0.35		0.35
	O & M			12.20		12.20
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total		0		0.01		0.01
Total Dollars		0		12.55		12.55

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
330-84 Regional Quality Control Assurance Program

ECS PROGRAM - 1.3 - Water Quality Management Data
DURATION - Ongoing since 1984

OBJECTIVES
To ensure the generation of the highest quality water quuality data.

RATIONALE
In order to fulfill its mandat, the Branch is committed to producing the best possible data and to fully understanding the limits of this data.

DESCRIPTION
In order to meet their commitment to quality control, the Branch operates several projects. These quality control projects focus on both the field and laboratory stages of data production.

COORDINATOR(S) - D. Roberts

RESOURCES
N/A

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
331-84 Field Quality Control

ECS PROGRAM - 1.3* - Water Quality Management Data
DURATION - Ongoing since 1980

OBJECTIVES
(1) Ascribe a degree of precision to the existing sampling method for specific parameters. (2) Establish criteria on which to review the project design. (3) Periodically review the project design. (4) Prepare interpretive reports on an as required basis.

RATIONALE
Knowledge of sampling precision is invaluable to data interpretation. In order that the field quality control project be carried out in the most effective manner possible, a routine procedure for the analysis of data and review of the project design in required.

DESCRIPTION
This project is intended to help ensure consistency in field practices and to quantify the precision of sampling practices. In order to carry this out, replicate samples are collected and analyzed. The results are used to determine analytical variability, calibrate instruments and ensure overall quality control.

COORDINATOR(S) - D. Roberts

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof		0.01	0.14		0.15
	PY Tech		0.23	0.03		0.26
	Salary		6.18	4.40		10.58
	O & M		8.90			8.90
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M	9.65				9.65
	Capital					
PY Total			0.24	0.17		0.41
Total Dollars		9.65	15.08	4.40		29.13

* Affiliated ECS Program(s) - 1.1

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
332-84 Miscellaneous Field Quality Control

ECS PROGRAM - 1.3 - Water Quality Management Data
DURATION - Ongoing

OBJECTIVES
Project allows coding of data not intended to be entered on NAQUADAT.

RATIONALE
Some data generated in certain projects is not wanted on NAQUADAT. As a result, a special project number is required to allow coding for in-house data analysis and to make NAQUADAT entry more streamlined.

DESCRIPTION
This is an "umbrella" project intended to allow coding of miscellaneous samples from various projects, which are not to be stored on NAQUADAT (i.e. distilled water blanks, sample to assess field filtering methods, etc.). Annual reports to file based on the results from the filter blank and rinse water blank samples are required from each of the Resource Officers for samples generated in their programs.

COORDINATOR(S) - Roberts

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof					0.00
	PY Tech		0.02			0.02
	Salary	0.05	0.57			0.62
	O & M	0.03	0.38			0.41
	Capital	0.02	0.18			0.20
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total			0.02			0.02
Total Dollars		0.10	1.13			1.23

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
333-84 Inter-Regional Quality Control

ECS PROGRAM - 1.3
DURATION - Ongoing

OBJECTIVES
To ensure the quality and compatibility of laboratory data by participating in the national round-robin quality control program.

RATIONALE
Quality assurance or quality control ensures that the integrity of the data generated at the laboratory is maintained at a high level of excellence.

DESCRIPTION
The National Coordinator selects parameters for investigation and submits appropriate samples to participating laboratories of which the Saskatoon Branch Laboratory is one. A high priority is given to analyzing these samples.

The accuracy and precision of the data generated by the Saskatoon Laboratory is compared by the project coordinator to the known values and to the results from other laboratories. If the examination shows it to be necessary, methodology is changed to improve the quality of the generated data.

COORDINATOR(S) - D. Roberts

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof		0.01			0.01
	PY Tech		0.06			0.06
	Salary		1.91			1.91
	O & M		0.82			0.82
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total			0.07			0.07
Total Dollars			2.73			2.73

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
334-84 Intra-Laboratory Quality Control

ECS PROGRAM - 1.3 - Water Quality Management Data
DURATION - Ongoing

OBJECTIVES
To ensure the quality and compatibility of laboratory data by checking analytical performance of the Inorganic Laboratory through the use of spike, duplicates, blind unknowns, blanks, related parameter correlations and cation-anion balance checks.

RATIONALE
Quality assurance and quality control ensure that the quality and integrity of the data generated at the laboratory is maintained at a high level of excellence.

DESCRIPTION
The Head of the Inorganic Laboratory selects parameters for investigation as the need arises by introducing blind samples whose constituent concentrations are unknown to the analysts. The obtained values are compared with expected results.

On an ongoing basis, all analysts are instructed to duplicate (within practicality) every tenth sample and spike (within practicality) every twentieth sample. The data examined and, if necessary, corrective action taken.

All analysts are required to prepare standards, blanks and rinses to be included with determinations where applicable. The results of each run are calculated and checked for inconsistencies.

COORDINATOR(S) - Roberts

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof		0.02			0.02
	PY Tech		0.21			0.21
	Salary		8.85			8.85
	O & M		0.90			0.90
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total			0.23			0.23
Total Dollars			9.75			9.75

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
335-84 Evaluation of Major Ion Data

ECS PROGRAM - 1.3 - Water Quality Management Data
DURATION - 1984/85

OBJECTIVES
Determine the feasibility of sending W & NR water samples to the Burlingotrn Lab for Major Ion Analyses.

RATIONALE
Following the transfer of major ion analyses from the Regional to the National Lab, data indicates considerable differences between the values for some major ions from the two laboratories for certain sites. In order to determine whether the longer shipment time to Ontario is detrimental to the production of reliable data for major ions, comparative data will be collected.

DESCRIPTION
The project will involve the collection of all possible comparative data from the two WQB laboratories for alkalinities and calcium. These data will be used to determine which sites are prone to variations in concentrations for the above parameters. Major ions for these stations will be analyzed by a third laboratory in the W & NR. The resulting data and its comparison with WQB lab data will be used to determine if the longer shipment time to Ontario is detrimental to major ion data and, if so, to develop a policy for major ion analyses of W & NR water samples.

The costs of acquiring outside analytical support is included in Field O & M.

COORDINATOR(S) - D. Roberts

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof					0.00
	PY Tech			0.04		0.04
	Salary			1.20		1.20
	O & M			0.30		0.30
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total				0.04		0.04
Total Dollars				1.50		1.50

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
340-84 International Water Quality Objectives

ECS PROGRAM - 1.1 - Interjurisdictional Water Management
DURATION - Ongoing

OBJECTIVES
Initiate and implement negotiations with pertinent officials, with respect to the establishment of water quality objectives at specific transboundary locations.

RATIONALE
Within Western and Northern Region, there is a significant amount of transboundary drainage. For those streams which cross international or territorial borders, the federal government has a clear responsibility to promote the establishment of water quality objectives.

DESCRIPTION
During the year 1984/85, negotiations will continue between U.S.A. and Canadian agencies on the establishment of objectives for the Souris River at both transboundary locations. This will involve development of a Canadian negotiating strategy (i.e. Canada, Saskatchewan and Manitoba), meeting with U.S.A. counterparts, review of data and criteria information and ultimately objectives development.

COORDINATOR(S) - Thomson

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof			0.65		0.65
	PY Tech					0.00
	Salary			26.00		26.00
	O & M			7.50		7.50
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total				0.65		0.65
Total Dollars				33.50		33.50

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
341-84 Interprovincial and Federal WQO Promotion and Development

ECS PROGRAM - 1.1 - Interjurisdictional Water Management
DURATION - Ongoing

OBJECTIVES
Provide ongoing assistance and advice upon request to WQB-W&NR staff and to promote and assist in the application of water quality objectives for interprovincial waters; and promote and develop water quality management strategies for federal waters.

RATIONALE
Other divisions of WQB, W&NR, other federal agencies as well as provincial governments are involved in activities that may either support or benefit from the support of the Water Quality Objectives Division. Input to these activities is required on a continuing basis from WQO Division in order that maximum, mutual benefit is achieved.

DESCRIPTION
Support and advice, with respect to water quality objectives, will be given to the Branch representative on the PPWB Committee on Water Quality, Branch staff and, where feasible, to individual provinces. Contact will be developed and maintained with other federal agencies with regard to the promotion of water quality objectives.

COORDINATOR(S) - Thomson

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof			0.3		0.3
	PY Tech					
	Salary			12.0		12.0
	O & M			5.0		5.0
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total				0.3		0.3
Total Dollars				17.0		17.0

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
342-84 Water Quality Objectives Evaluation

ECS PROGRAM - 1.1 - Interjurisdictional Water Management
DURATION - Ongoing

OBJECTIVES
To review and revise, where necessary, the existing Regional plan for the Water Quality Objectives Division; tomaintain knowledge of policy and technical advances; develop and review compliance monitoring strategies and resultant data for relevant locations.

RATIONALE
In order to maintain orderly and logical operation of the Water Quality Objectives Division as well as contribute to the Long Term Operational Planning process, the Division regional plan must be kept current. One method of doing this is through maintenance of a continual awareness of advances in related technology and policy. This allows an evaluation of current procedures and appropriate revisions. Compliance monitoring is also a form of water quality objectives evaluation. Not only does it serve to evaluate the quality of water it also points out shortfalls in technologic or strategic design, where appropriate revisions should be made.

DESCRIPTION
Based on the findings of meetings with WQB and other government agencies, and a review of relevant literature, the operational plan will be updated. Transboundary streams will be ranked according to their need for objectives. Interviews will be prepared and conducted for the position of water quality specialist.

COORDINATOR(S) - Thomson

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof			0.5		0.5
	PY Tech					
	Salary			20.0		20.0
	O & M			5.0		5.0
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total				0.5		0.5
Total Dollars				25.0		25.0

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
350-84 Surveys and Interpretation Division Strategic Plan

ECS PROGRAM - 1.3 - Water Quality Management Data
DURATION - Ongoing

OBJECTIVES
To identify SID's priorities and directrion in the context of the Water Quality Branch program and to maintain this strategy on an ongoing basis.

RATIONALE
S & ID consists of a group of disparate technical and professional experts whose responsibilities are divided between providing advice and support to other Branch staff as well as undertaking specialized and multi-disciplinary studies and surveys. In order for the Division to fulfill this role effectively it is necessary to identify its working relationships within the Branch and develop a strategy for achieving its goals.

DESCRIPTION
A plan will be prepared for the Division which will identify its priorities, its working relationships within the Branch and develop a strategy for achieving its goals. The Regional EDP Plan, Regional Groundwater Plan, Regional Biomonitoring Plan and other more specific operational plans will identify specific implementation activities of the Division. It will be essential to update this strategic Plan and the operational plans annually.

COORDINATOR(S) - D. Gregor

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof			0.05		0.05
	PY Tech					
	Salary			2.25		2.25
	O & M					
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total				0.05		0.05
Total Dollars				2.25		2.25

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
351-84 Review of Regional Nutrient Monitoring Requirements

ECS PROGRAM - 1.3 - Water Quality Management Data
DURATION - Ongoing since April 1983

OBJECTIVES
To undertake a detailed review of current nutrient monitoring activities in light of current knowledge and needs and to recommend a regional nutrient monitoring strategy.

RATIONALE
With the relocation of the lab, division of services between the regional and national lab and the retention and enhancement of nutrient capability within the region, it is timely to review capability and assess future and present needs.

DESCRIPTION
Current monitoring needs and analytical capability will be reviewed and alternatives assessed. A brief report for internal Branch use will be prepared recommending desireable field sampling practices, analytical procedures and necessary equipment.

COORDINATOR(S) - Gregor, Gaskin

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof			0.02		0.02
	PY Tech					
	Salary			0.80		0.80
	O & M			0.50		0.50
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total				0.02		0.02
Total Dollars				1.30		1.30

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
353-84 Evaluation of Seakem Sampler

ECS PROGRAM - 1.1 - Interjurisdictional Water Management
DURATION - 1984/85

OBJECTIVES
To evaluate the effectiveness of the Seakem prototype sampler in highly turbid and highly productive prairie systems.

RATIONALE
WQB-HQ has supported the development of a specialized microprocessor controlled contaminant sampler. The prototype purchased by the Branch has been requested for testing in the region under the extreme water quality conditions of prairie streams prior to further development or production.

DESCRIPTION
The prototype sampler, when provided to the region, will be used for testing in highly turbid and biologically productive river systems including the Qu'Appelle and South Saskatchewan. Initially the effect of turbidity and biological growth in the filter mechanism and the columns will be assessed. If the sampler seems capable of handling these physical problems, its ability to concentrate pesticides in packed columns for analytical measurement will be compared to more conventional techniques. A report and recommendations will be prepared. A calendar cannot be drawn up for this project because the date of receipt for the sampler is unknown at this time.

COORDINATOR(S) - D. Gregor

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof			0.1		0.1
	PY Tech					
	Salary			4.5		4.5
	O & M			5.0		5.0
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total				0.1		0.1
Total Dollars				9.5		9.5

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
355-84 Trend Assessment Pilot Studies

ECS PROGRAM - 1.3* - Water Quality Management Data
DURATION - Ongoing since 1979

OBJECTIVES
To determine those factors which influence the design of a trend assessment project.

RATIONALE
Prior to establishing a trend assessment project, certain design questions must be answered. This is done through a pilot study.

DESCRIPTION
There are no pilot studies planned for this fiscal year.

COORDINATOR(S) - Guilbault

RESOURCES
N/A

* Affiliated ECS Program(s) - 1.1

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
357-84 Cumberland Marshes Water Quality Summary Report

ECS PROGRAM - 1.1 - Interjurisdictional Water Management
DURATION - 1984/85

OBJECTIVES
1 To summarize the water quality data collected over the last five years for the Cumberland Marshes in order to assess the impacts of the Ducks Unlimited project

2 To recommend future monitoring and assessment needs and strategies

RATIONALE
The development and operation of the Cumberland Marshes Ducks Unlimited project has the potential to alter the quality of the Birch and Saskatchewan Rivers. Monitoring has continued for five years and a thorough review is warranted.

DESCRIPTION
Annual reports have been published in the preceding years. This year a review of all available data will be undertaken by a subcommittee of the Committee on Water Quality in order to evaluate and synthesize the data base and, if necessary, recommend further activities to measure effects on the Birch and Saskatchewan Rivers.

COORDINATOR(S) - D. Gregor, R. Crosley

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof			0.15		0.15
	PY Tech					
	Salary			2.00		2.00
	O & M			1.00		1.00
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total				0.15		0.15
Total Dollars				3.00		3.00

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
358-84 Investigation of the Aquatic Quality of Cookson Reservoir

ECS PROGRAM - 1.1 - Interjurisdictional Water Management
DURATION - April 1983 to July 1985

OBJECTIVES
To conduct an investigation of the aquatic quality, in particular Hg concentrations, of the Cookson Reservoir in Saskatchewan.

RATIONALE
A survey conducted in 1979, prior to start up of the SPC Poplar River Generating Station, revealed high mercury levels in fish from Cookson Reservoir. This study will re-examine this problem to determine the present status of mercury in the reservoir.

DESCRIPTION
In 1979, the WQB conducted a baseline survey of Cookson Reservoir prior to the start up of the SPC Poplar River Generating Station. That survey examined metals in the water, sediment and biological samples from Cookson Reservoir and from the East Poplar River below the reservoir. These analyses showed that mercury was present at high levels in the muscle tissue of walleye and to a lesser extent in suckers. This study is intended to determine if mercury is still high in the tissues of fish; and, if it is, to attempt to better define the source of this mercury. Biological, sediment and water samples will be collected from the reservoir and the East Poplar River below the reservoir for mercury anaylsis.

COORDINATOR(S) - Munro, Gregor

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof			0.2		0.20
	PY Tech	0.02				0.02
	Salary	0.46	0.13	7.1		7.69
	O & M	0.31	0.09	1.5		1.90
	Capital	0.15	0.04			0.19
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total		0.02		0.2		0.22
Total Dollars		0.92	0.26	8.6		9.78

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
358-84 Investigation of the Aquatic Quality of Cookson Reservoir

STATION LIST

Map no.	Station location	NAQUADAT no.	Sampling frequency
96	Cookson Reservoir Lower End	01SA11AE0002	V
97	Cookson Reservoir Upper End	01SA11AE0003	V

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
360-84 Regional Biomonitoring Program

ECS PROGRAM - 4.1* - Toxic Chemicals
DURATION - Ongoing

OBJECTIVES
To develop and initiate a biological monitoring program to assist in assessing aquatic quality within the Western and Northern Region.

RATIONALE
An adequate assessment of aquatic quality is an integrated approach of the chemical, physical and biological sciences. The Branch has undertaken the development of a biological monitoring program to meet this need.

DESCRIPTION
A biological monitoring program is being developed through a search of the scientific literature, contacting and meeting experts in the field, reviewing present WQB biological activities and undertaking pilot studies. The plan will outline the techniques commonly used their application, the pros and cons and will recommend methods for use in this region. The plan will be multi-year in scope and will be reviewed annually.

COORDINATOR(S) - Munro

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof			0.18		0.18
	PY Tech					
	Salary			6.30		6.30
	O & M			3.00		3.00
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total				0.18		0.18
Total Dollars				9.30		9.30

* Affiliated ECS Program(s) - 1.1

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
361-84 Forage Fish Assessment Program

ECS PROGRAM - 1.3* - Water Quality Management Data
DURATION - Ongoing - with annual rotation of sampling sites

OBJECTIVES
To collect forage fish samples are various monitoring locations throughout the region to examine metal and organic pollutant levels in their tissues.

RATIONALE
In order to adequately assess the aquatic quality the Branch feels an integrated approach to monitoring is required which examines chemical, physical and biological sciences and multiple media analysis. This project is intented to expand on the media analyzed by the Branch to include biological organisms at selected sites.

DESCRIPTION
The WQB decided in September 1983 to iniate a forage fish program to assess the bioaccumulation of pollutants in the aquatic environment. This program was to conducted on a limited trail basis during 1984/85. In this Region forage fish samples will be collected at six water quality monitoring sites during the summer of 1984. Five replicate samples will be collected to be analyzed for a number of metals and organic substances.

COORDINATOR(S) - Munro

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	TOTALS
A Base	PY Prof			0.1		0.10
	PY Tech	0.17		0.1		0.27
	Salary	3.37		4.9		8.27
	O & M	2.29		4.0		6.29
	Capital	1.08				1.08
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total		0.17		0.2		0.37
Total Dollars		6.74		8.9		15.64

* Affiliated ECS Program(s) - 1.1, 4.1

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
361-84 Forage Fish Assessment Program

STATION LIST

Map no.	Station location	NAQUADAT no.	Sampling frequency
10	Souris River near Glen Ewen	00SA05ND0001	ONCE/5 REPLICATES
22	South Saskatchewan River at Highway # 41	00AL05AK0001	ONCE/5 REPLICATES
23	Red Deer River near Bindloss	00AL05CK0001	ONCE/5 REPLICATES
24	Beaver River at Beaver Crossing	00AL06AD0001	ONCE/5 REPLICATES
28	Battle River near Unwin	00SA05FE0001	ONCE/5 REPLICATES
94	North Saskatchewan River at Lea Park	00AL05EF0001	ONCE/5 REPLICATES

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
365-84 Interjurisdictional Ground Water Quality

ECS PROGRAM - 1.3* - Water Quality Management Data
DURATION - Ongoing

OBJECTIVES
Revise and implement the regional ground water quality strategy in accordance with the new IWD policies on ground water.

RATIONALE
Many large aquifers in Western and Northern Region are transboundary in nature. Developments in one jurisdiction can degrade the aquifer quality in another, potentially affecting water uses. This is a major issue in historically water short areas, such as those near the International Border across the breadth of the Western and Northern Region.

DESCRIPTION
During 1982-83, a ground water quality strategy was prepared for W & NR. This strategy will be revised for purposes of implementation, in accordance with the new IWD policies on ground water. Contact will be maintained with NHRI, other federal and provincial agencies which have an involvement in ground water. Ongoing support to Water Quality Branch will be provided with respect to other Branch projects, as will support for IWD programs.

COORDINATOR(S) - McNaughton

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof			0.1		0.1
	PY Tech					
	Salary			3.5		3.5
	O & M			2.5		2.5
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total				0.1		0.1
Total Dollars				6.0		6.0

* Affiliated ECS Program(s) - 1.1

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
366-84 Regional Groundwater Data Base Development

ECS PROGRAM - 1.3 - Water Quality Management Data
DURATION - Initiated 1984-85; ongoing after that

OBJECTIVES
To improve the accessibility of groundwater data in W & NR, and to improve communication with the Provinces in this matter.

RATIONALE
Ground water data is difficult to access in W & NR.

DESCRIPTION
Coordinator will be in contact with Provincial Data storage agencies to attempt to work out a method of routine data exchange upon which to build the data base

There is a large amount of ground water data in the region but is is unorganized. The main purpose of this project will be to gather all the ground water data possible and assemble it into one data base administered by IWD.

COORDINATOR(S) - D. McNaughton

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof			0.3		0.3
	PY Tech					
	Salary			9.2		9.2
	O & M			3.5		3.5
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total				0.3		0.3
Total Dollars				12.7		12.7

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
367-84 Poplar River Data Base Interpretation

ECS PROGRAM - 1.1 - Interjurisdictional Water Management
DURATION - 1984-86

OBJECTIVES
(1) To compile onto RS1 tables all water quality data for the Poplar River since approximately 1965. (2) To study the data base in order to determine whether it is sufficient for the characterization of the ground and surface water quality in the area. (3) To write an interpretive report showing the relationships between coal mining in the area and changes in ground and surface water quality over the period of the record, if warranted by the data base.

RATIONALE
Water quality data has been collected in the Poplar River area for approximately 20 years. In 1981, the Bilateral Monitoring Committee of the IJC started producing yearly reports. These reports are very brief and do not go into much detail on water quality. It is necessary to know if the existing water quality data base can be used for a detailed hydrochemical report on the Poplar River Area. If the data base were judged satisfactory, then an interpretive could be written, integrating both the ground and surface water quality data.

DESCRIPTION
This project will consist of three parts: (1) data input to RS1 tables from available sources, (2) data inspection and overall appraisal, and (3) report preparation, if necessary.

COORDINATOR(S) - D. McNaughton

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof			0.26	0.01	0.27
	PY Tech			0.10		0.10
	Salary			10.20	0.50	10.70
	O & M					
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total				0.36	0.01	0.37
Total Dollars				10.20	0.50	10.70

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
368-84 Agricultural Effects On Groundwater Quality

ECS PROGRAM - 1.3 - Water Quality Management Data
DURATION - May 1984 to May 1985

OBJECTIVES
This study will shed light upon the overall effects of animal wastes on the quality of ground water in the Western and Northern Region.

RATIONALE
The contamination of ground waters by the infiltration of animal wastes has a potentially-widespread impact on the important ground water supplies of the region. There are interjurisdictional implications, both from the direct movement of ground water across provincial boundaries, and in the contribution of potentially-contaminated waters from the ground water zone into interjurisdictional surface water bodies.

DESCRIPTION
The project will consist of a data search on the subject. An assessment will be made on the magnitude of the problem, if any is seen to exist. Recommendations will be made accordingly.

COORDINATOR(S) - D McNaughton

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	TOTALS
A Base	PY Prof			0.3		0.3
	PY Tech					
	Salary			5.0		5.0
	O & M			1.5		1.5
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total				0.3	0	0.3
Total Dollars				6.5	0	6.5

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
369-84 Nut Lake I.R. Water Supply Evaluation

ECS PROGRAM - 1.3 - Water Quality Management Data
DURATION - April 5 to July 30, 1984

OBJECTIVES
To assess the suitability of surface water and ground water options for Nut Lake IR potable water supply.

RATIONALE
INAC and H & WC have requested the support of the Branch to meet the above stated objective. Federal lands is considered to be an area where the Brnch should be involved particularly with respect to advocating sound management and quality characterizations to those agencies who have the direct responsibilities.

DESCRIPTION
Spring freshet samples will be collected approximately daily from Pipestone Creek above Nut Lake. The suitability of this water for drinking water purposes will be assessed. Two other sources will also be collected but on a much reduced frequency: the town of Fosston water supply and a local ground water source in the northeast quadrant of the IR. Analytical support will be split among three labs: Saskatchewan Health Laboratories, WQB Saskatoon and WQB National laboratories. Collection will be provided essentially by H & WC with some assistance from the Band Planner and if necessary Branch staff. Two reconnaissance trips are planned.

COORDINATOR(S) - Wm. Gummer and D. MacNaughton

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	TOTALS
A Base	PY Prof				0.02	0.02
	PY Tech	0.01				0.01
	Salary	0.13	0.04			0.17
	O & M	0.09	0.03			0.12
	Capital	0.42	0.14			0.56
Recov.	PY Prof					
	PY Tech	0.06	0.01			0.07
	Salary	1.19	0.39			1.58
	O & M	0.81	0.27			1.08
	Capital					
PY Total		0.07	0.01		0.02	0.10
Total Dollars		2.64	0.87			3.51

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
369-84 Nut Lake I.R. Water Supply Evaluation

STATION LIST

Map no.	Station location	NAQUADAT no.
S1	Pipestone Ck. near Ross Valley	
S2	Well No. 5 or 7 IR	
S3	Fosston Water Supply Truck	

Map no.	Sampling frequency
S1	ONCE DAILY FOR 10 DAYS
S2	3 IN 1 DAY/2 HR. INTERV-
S3	ONCE BUT DUPLICATE

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
370-84 Toxic Chemicals - General

ECS PROGRAM - 4.1 - Toxic Chemicals
DURATION - Ongoing

OBJECTIVES
Identify and assess the distribution of toxic chemicals in waters of federal interest.

RATIONALE
Toxic chemicals pervade every corner of the environment. Information on their presence, abundance, distribution, mobility and effects is essential towards understanding the risk they pose to man and the environment. The information is also required for managers to make decisions concerning abatement and the effectiveness of controls.

DESCRIPTION
Analytical services are provided in support of Programs 1.1 and 1.6 - as part of the routine monitoring programs. Special studies are carried out with or without TOXFUND assistance. During 1984/85 two new studies dealing with toxic substances will be undertaken (see Projects 361 and 376). In addition, two internal reports dealing with contaminants below industrial centers and in the Red River Basin will be completed (see Project 372 and 373) as well as a review of alternatives for organic measurement and assessment practices will be conducted.

COORDINATOR(S) - D. Munro, J. Gaskin

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof		0.1	0.2		0.3
	PY Tech					
	Salary		4.5	6.8		11.3
	O & M		1.5	2.5		4.0
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total			0.1	0.2		0.3
Total Dollars			6.0	9.3		15.3

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
371-84 Synthetic Organic Compounds in the Red River

ECS PROGRAM - 4.1* - Toxic Chemicals
DURATION - April 1981 to March 1985

OBJECTIVES
To identify, categorize and report on the fluvial transport of synthetic organic compounds in the Red River at Emerson and at North Perimeter of Winnipeg.

RATIONALE
A large number of organic compounds, primarily of herbicide type, are used in the Red River basin but testing for residual deposition of several of these compounds in the water of the Red River or its sediments is not carried out by any agency. This study is designed to meet this need by collecting and analyzing both water and sediment samples.

DESCRIPTION
Triplicate suspended sediment and water samples were collected from Red River at Emerson, North Perimeter (Winnipeg) and from Assiniboine River at Charleswood in June and August, 1981. Also one set of bottom sediment, in duplicate was collected from all three locations.

Final analyses and reporting has been postponed due to the loss of the Organic Chemist from the Region. No work will be undertaken this year aside from a review of the study and results as part of the review of the Regional Toxic Chemicals Program as per Project 370.

COORDINATOR(S) - J. Gaskin, V. Chacko

RESOURCES
N/A

* Affiliated ECS Program(s) - 1.1

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
372-84 Toxic Chemicals in Impoundments and Deltas

ECS PROGRAM - 4.1 - Toxic Chemicals
DURATION - 1982 to 1985

OBJECTIVES
To determine the presence and level of selected known and unknown toxic chemicals in impoundments and deltas.

RATIONALE
Waterways are major transport mechanisms for toxic substances. Since many of these toxic substances are associated with suspended sediment, zones of sediment deposition such as reservoirs, lakes and deltas are potential sinks for these substances. The Red River Delta is a major depository for sediments in the Red River System. Characterization of toxins in these sediments and biota will greatly assist the hazard and risk assessments of these chemicals to both man and the environment.

DESCRIPTION
A two year survey was proposed to examine bottom sediment, biota and rooted macrophytes in the Red River Delta (sampling completed in 1981/82) for the presence of toxic chemicals including heavy metals and biocides. Samples were collected from the deposition zones by standardized sampling techniques. Only the upper 0.5 to 2 cm of the sediment were sampled so that the results would represent the most recently deposited material. Extra samples were also collected, appropriately labeled and placed in a specimen bank for future analyses as may be required.

Final analyses and reporting has been postponed due to the loss of the organic chemist from the Region. No work will be undertaken this year aside from a review of study and results as part of the review of the Regional Toxic Chemicals Program Review as per Project 370-84.

COORDINATOR(S) - J. Gaskin, V. Chacko

RESOURCES
N/A

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
373-84 Organic Contaminants Downstream of Industrial Centres

ECS PROGRAM - 4.1 - Toxic Chemicals
DURATION - June 1981 to March 1985

OBJECTIVES
To determine the impact of industrial effluents, particularly of petrochemical industry on the Regional Waters and to establish a mass spectra reference file of the organics in these waters for future reference. Prepare a report on the findings.

RATIONALE
The need exists for developing and refining the analytical capability for identifying the present and evolving organics in the waters of Western Canada, which will be an important step in developing an early warning system. Samples for this purpose were collected from rivers downstream of industrial centers where contamination is most likely to occur.

DESCRIPTION
To determine the impact of industrial effluents, particularly of petrochemical industry on the Regional Waters, samples were collected below industrial centers in Western Canada. The proposed locations were: North Saskatchewan River below Edmonton and at Highway 3, South Saskatchewan River below Saskatoon and at Highway 4, Bow River below Calgary, Wascana Creek below Regina and Red River below Winnipeg. The biocides measured are those identified by the Toxic Chemicals Management Program, EPA priority chemicals and WHO.

Final analyses and reporting has been postponed due to the loss of the Organic Chemist from the Region. No work will be undertaken this year aside from a review of the study and results as part of the review of the Regional Toxic Chemicals Program as per Project 370.

COORDINATOR(S) - J. Gaskin, V. Chacko

RESOURCES
N/A

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
374-84 South Saskatchewan R. and L. Diefenbaker Study

ECS PROGRAM - 4.1 - Toxic Chemicals
DURATION - 1984/85 and 1985/86

OBJECTIVES
(1) To describe the temporal and spatial water chemistry characteristics of Lake Diefenbaker and the South Saskatchewan and Red Deer Rivers above and below their confluence. (2) To quantify the contaminant burden of the resident biota. (3) To synthesize this and other availablke information in a comprehensive report.

RATIONALE
Lake Diefenbaker is a high priority of the Province of Saskatchewan because of the need to protect the lake as a supply of drinking and irrigation water and as a recreational reservoir. Current priorities require that an extensive short duration study be undertaken in order to assist with pending management discussions. This study will also be used to determine the need for a longer intensive study or monitoring program and/or identify research needs within the basin.

DESCRIPTION
Due to the many facets of this study, a summarized description has not been provided. A study plan which also shows the work sharing program between WQB and SDOE is available from the project coordinator. For information regarding the timing of this project please refer to the detailed study plan.

COORDINATOR(S) - D. Gregor, R. Crosley

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	TOTALS
A Base	PY Prof		0.03	0.6		0.63
	PY Tech	0.65	0.29	0.2		1.14
	Salary	13.07	8.93	35.0		57.00
	O & M	8.89	5.36	34.0		48.25
	Capital	4.18	2.52	15.0		21.70
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M			50.0		50.00
	Capital					
PY Total		0.65	0.32	0.8		1.77
Total Dollars		26.14	16.81	134.0		176.95

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
374-84 South Saskatchewan R. and L. Diefenbaker Study

STATION LIST

Map no.	Station location	NAQUADAT no.	Sampling frequency
22	South Saskatchewan River at Highway # 41	00AL05AK0001	V
23	Red Deer River near Bindloss	00AL05CK0001	V
S1	S. Sask. R. near Leader		V
S2	S. Sask. R. near Lemsford		V

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
375-84 Specimen Banking

ECS PROGRAM - 4.1 - Toxic Chemicals
DURATION - Ongoing

OBJECTIVES
To establish and maintain a regional specimen bank for sediment, biological, and water samples. Establish procedures for collecting, treating, and storing sediments.

RATIONALE
The establishment of a speciment bank will allow for the timely collection of samples from various field program ,which can be stored for analysis at a latter date; thereby, reducing costs in the field and laboratory. In addition specimen banking could create a source of samples for possible retrospective analysis.

DESCRIPTION
Initially this project will consist of a review of available literature on the subject of sample storage including collection methods, splitting and preservation method and storage containers required for the various forseeable analysis. Also included in the initial stages of this project will be the establishment of a procedure for recording and cataloguing of samples placed in the specimen bank.

COORDINATOR(S) - Munro, Gregor

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof			0.12		0.12
	PY Tech			0.22		0.22
	Salary			7.80		7.80
	O & M			2.50		2.50
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total				0.34		0.34
Total Dollars				10.30		10.30

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
377-84 Lac du Bonnet Radioisotopes Study

ECS PROGRAM - 4.1 - Toxic Chemicals
DURATION - 1984-1985

OBJECTIVES
(1) Conduct a sampling program during the summer of 1984 in the Lac du Bonnet area (2) Have samples analyzed for Uranium, Radium, major ions, physical parameters (3) Define the area of contamination in relation to the regional geolgy (4) Report on the results

RATIONALE
The project's stated purpose is to define the area affected by high radionuclide concentrations, and to relate it to the geological and hydrochemical conditions in the region. The reason for federal involvement is that the AECL underground research facility is being built nearby, and it is necessary to establish some of the baseline hydrochemical conditions prior to its commissioning. This could prevent future disputes as to the antecedence of groundwater quality problems with respect to the Underground Lab.

DESCRIPTION
The project will involve approximately 3 weeks field work during the summer of 984. Samples will be collected from existing wells in the area, by prior arrangement with well owners. Samples will be submitted to Burlington for the major ions (Ca, Mg, Na, SO4, Cl, F, K, ALE, SIO2, CondF, pHF), and to SRC for radionulcide determinations. The physical parameters will be done in the field.

COORDINATOR(S) - D. McNaughton

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	TOTALS
A Base	PY Prof			0.13	0.01	0.14
	PY Tech					0.00
	Salary			4.60		4.60
	O & M	0.61		7.50		8.11
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M				6.90	6.90
	Capital					
PY Total				0.13	0.01	0.14
Total Dollars		0.61		12.10	6.90	19.61

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
378-84 Aquatic Sensitivity to Acid Rain - Mapping

ECS PROGRAM - 4.1 - Toxic Chemicals
DURATION - 1984/85

OBJECTIVES
(1) To map the available data for the NWT for aquatic sensitivity to acid rain in accordance with guidelines established by the Western Canada LRTAP Committee. (2) To provide assistance and coordination to the provinces of Manitoba, Saskatchewan, and Alberta in their mapping. (3) Identify sensitive or potentially sensitive areas requiring further data collection.

RATIONALE
The Western Canada LRTAP Committee has recommended that all of Western Canada should be mapped. WQB is providing support for the NWT through computerized isochronal mapping capabilities. In order to ensure that the maps for all three provinces are comparable, WQB is providing mapping assistance and overall coordination.

DESCRIPTION
NAQUADAT data available for the last 10 years for the NWT have been screened for suitability within this excercise. Stations on large river systems and lakes which receive drainage from heterogeneous soil types and rock parent materials were excluded. The remaining stations will be used in the preparation of isochronal maps for pH, Ca, Mg, Alk and Al, which together with the terrestrial sensitivity maps should outline sensitive areas and/or areas requiring more data. This information will be compiled with that of other provinces to prepare a map for Western Canada.

COORDINATOR(S) - D. Gregor

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof			0.1		0.1
	PY Tech					
	Salary			4.5		4.5
	O & M			3.0		3.0
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total				0.1		0.1
Total Dollars				7.5		7.5

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
390-84 Water Quality Monitoring by WRB

ECS PROGRAM - 1.3* - Water Quality Management Data
DURATION - Ongoing since 1978

OBJECTIVES
In cooperation with Water Resources Branch (WRB), to monitor the quality of surface waters at 16 locations in the NWT, to prepare the regional ambient water quality data reports and the periodic reports on the quality of the aquatic environment.

RATIONALE
Since the NWT are classified as Federal Lands the water quality at 16 sites considered to be of significant interest to Environment Canada is being monitored. These data are required for the report on the quality of the aquatic environment.

DESCRIPTION
A total of 16 sites will be monitored as stations of significant federal interest. These sites are co-located with the hydrometric sites and are sampled by WRB at time of visit. An in-depth review of water quality monitoring in the NWT was initiated in FY 83/84 and will be completed in FY 84/85. As a result of this review the monitoring program may change. It is unlikely however that any changes will be instituted until FY 85/86.

COORDINATOR(S) - B. Olding

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof		0.01			0.01
	PY Tech	0.10	0.12	0.05		0.27
	Salary	2.02	3.72	1.50		7.24
	O & M	1.37	2.29	7.50		11.16
	Capital	0.65	1.08			1.73
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total		0.10	0.13	0.05		0.28
Total Dollars		4.04	7.09	9.00		20.13

* Affiliated ECS Program(s) - 1.1

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
390-84 Water Quality Monitoring by WRB

STATION LIST

Map no.	Station location	NAQUADAT no.	Sampling frequency
70	Mackenzie River near Fort Providence	00NW10FB0001	V
71	Camsell River at outlet of Clut Lake	00NW10JA0001	V
72	Coppermine River at outlet of Point Lake	00NW10PB0001	V
73	Tree River near mouth	00NW10QA0001	V
74	Ellice River near mouth	00NW10GD0001	V
75	Back River near Deep Rose Lake	00NW10RC0001	V
76	Great Bear River at outlet of Great Bear Lake	00NW10JC0001	V
77	Mackenzie River at Norman Wells	00NW10KA0001	V
78	Anderson River above Carnwath River	00NW10NC0001	V
79	Mackenzie River above Arctic Red River	00NW10LA0003	V
80	Peel River at Fort McPherson	00NW10MC0001	V
81	Quoich River near Baker Lake	00NW06MB0001	V
82	Kazan River above Kazan Falls	00NW06LC0001	V
83	Baker Lake 1.6 Km. from Baker Lake	01NW06MA0001	V
84	Thelon River above Thelon Bluffs	00NW06JC0001	V
85	Lockhart River below Artillery Lake	00NW07RD0001	V

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
391-84 Benchmark Basins Monitoring by WRB

ECS PROGRAM - 1.3 - Water Quality Management Data
DURATION - Ongoing since April 1980

OBJECTIVES
To conduct a water quality survey of a benchmark station.

RATIONALE
At the request of the Regional Director of IWD, sampling is being conducted by WRB to characterize the quality of a benchmark stream.

DESCRIPTION
A station hasnot yet been identified as a benchmark stream. Otherwise, water sampling is conducted by WSC during the regular hydrometric surveys. The water quality parameters include major ions, nutrients, metals and some field tests. The data are verified and submitted for inclusion in regional data reports.

COORDINATOR(S) - B. Olding

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof			0.01		0.01
	PY Tech	0.01	0.01	0.01		0.03
	Salary	0.13	0.21	0.70		1.04
	O & M	0.09	0.14	0.30		0.53
	Capital	0.04	0.07			0.11
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total		0.01	0.01	0.02		0.04
Total Dollars		0.26	0.42	1.00		1.68

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
391-84 Benchmark Basins Monitoring by WRB

STATION LIST

Map no.	Station location	NAQUADAT no.	Sampling frequency
S1	Benchmark Station		V

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
392-84 Interjurisdictional Monitoring by WRB

ECS PROGRAM - 1.3 - Water Quality Management Data
DURATION - Ongoing

OBJECTIVES
1 To conduct monthly or time of visit water quality sampling at the designated interjurisdictional locations.

2 To prepare the data collected from these sites for the detailed data reports.

RATIONALE
WQB has aresponsibility to measure the water quality of interjurisdictional river systems.

DESCRIPTION
Monthly or time of visit samples are collected for a wide spectrum of parameters. The governments concerned are notified of potential or real problems. The data are reviewed on an annual basis to assess the relative quality of the boundary streams.

COORDINATOR(S) - B. Olding

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof			0.02		0.02
	PY Tech	0.07	0.02			0.09
	Salary	1.33	0.63			1.96
	O & M	0.91	0.43			1.34
	Capital	0.43	0.20			0.63
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total		0.07	0.02	0.02		0.11
Total Dollars		2.67	1.26			3.93

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
392-84 Interjurisdictional Monitoring by WRB

STATION LIST

Map no.	Station location	NAQUADAT no.	Sampling frequency
49	Slave River at Fitzgerald	00AL07NB0001	V
50	Hay River near Highway # 5	00NW07DB0001	V
51	Liard River above Fort Simpson	00NW10ED0002	V

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
393-84 Nahanni National Park Monitoring Agreement

ECS PROGRAM - 1.3 - Water Quality Management Data
DURATION - Ongoing since April 1980

OBJECTIVES
To collect quarterly water samples from the Flat River to provide an overview of water quality characteristics.

RATIONALE
IWD has a cost sharing Agreement with Parks Canada for hydrometric work in Nahanni Park. Included in this is the requirement for water quality monitoring on the Flat River.

DESCRIPTION
Quarterly sampling is carried out by WRB at the hydrometric station on the Flat River. The Branch provides sampling material and preservatives to the NWT office.

COORDINATOR(S) - B. Olding

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof			0.01		0.01
	PY Tech	0.01	0.01	0.01		0.03
	Salary	0.13	0.20	0.70		1.03
	O & M	0.09	0.13	0.50		0.72
	Capital	0.04	0.06			0.10
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total		0.01	0.01	0.02		0.04
Total Dollars		0.26	0.39	1.20		1.85

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
393-84 Nahanni National Park Monitoring Agreement

STATION LIST

Map no.	Station location	NAQUADAT no.	Sampling frequency
B6	Flat River near mouth	00NW10EA0004	V

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
394-84 Freshette Monitoring Activity

ECS PROGRAM - 1.3 - Water Quality Management Data
DURATION - 1984/85

OBJECTIVES
To conduct intensive freshette sampling at sites where WRB undertakes high flow rating activities

RATIONALE
One of the most difficult but most important periods to monitor is the spring freshette. WRB conducts high flow rating measurements at selected sites. Their presence provides an opportunity to collect useful information in a cost-effective manner.

DESCRIPTION
The sampling and analytical program will be determined for each site, however, in general, WRB staff will undertake daily sampling for a variety of parameters. Samples will be taken under ice cover prior to the freshette and during the rising and falling stages of the hydrgraph over the course of about two weeks.

COORDINATOR(S) - B. Olding

RESOURCES
N/A

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
395-84 Tsichu River Baseline Study

ECS PROGRAM - 1.3 - Water Quality Management Data
DURATION - 1984/85

OBJECTIVES
To collect baseline aquatic quality data for the Tsichu River prior to the development of mining activities in the basin

RATIONALE
A mine is presently being developed within the basin. In order to assess whether or not the mining activities will affect the environment, baseline studies are essential.

DESCRIPTION
A joint study is proposed with DIAND, EPS, GNWT and DFO. Details of the study will not be available until mid-FY 84/85 due to the need to conduct a reconnaissance trip and undertake further discussions with other members of the study team. Some preliminary water quality work is planned in FY 84/85.

COORDINATOR(S) - B. Olding, D. Gregor

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof			0.1		0.1
	PY Tech					
	Salary			4.0		4.0
	O & M			5.0		5.0
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total				0.1		0.1
Total Dollars				9.0		9.0

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
396-84 NWT Monitoring Evaluation

ECS PROGRAM - 1.3 - Water Quality Management Data
DURATION - April 1983 to March 1984

OBJECTIVES
To evaluate and summarize the activities in the NWT program and to develop a strategy for aquatic quality assessment in the NWT.

RATIONALE
In cooperation with WRB, the Branch monitors the quality of surface water at a number of locations in the NWT. While the project is assessed on an on-going basis, it is useful to periodically summarize the activities of the program, evaluate its effectiveness and recommend changes and alternatives.

DESCRIPTION
A total of 16 sites in the NWT have been monitored as part of several Branch projects during the past few years.

During 83/84 the program was briefly evaluated. Discussions were held with other agencies involved in the NWT (e.g. DIAND, GNWT, NWRI, DFO, etc.) and work on a draft NWT water quality strategy was begun. This strategy will be completed in 84/85 and, if approved, planning for implementation will begin. An outline of the strategy was prepared in FY 83/84.

COORDINATOR(S) - D. Gregor, B. Olding

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof			0.15		0.15
	PY Tech					
	Salary			6.00		6.00
	O & M			4.00		4.00
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total				0.15		0.15
Total Dollars				10.00		10.00

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
3001-84 Souris River Nitrogen and Phosphorus Speciation

ECS PROGRAM - 1.3 - Water Quality Management Data
DURATION - June 1979 to September 1984

OBJECTIVES
To determine the concentration and seasonal variation of nitrogen and phosphorus species in the Souris River.

RATIONALE
Implementation of the Garrision Diversion Scheme will result in diverting part of the Missouri River flow to the Souris and Red Rivers and eventually to Lake Winnipeg. Runoff from the Garrision Diversion, or future irrigation schemes could modify nitrogen and phosphorus species in the Souris River. Future changes in the nitrogen and phosphorus species can only be determined if the present pattern is established.

DESCRIPTION
Samples were collected for the period August, 1979 to August, 1980 at approximately monthly intervals in addition to the routine monthly samples. The cross-section of the river was divided into grids from which 12 were randomly selected for sampling during each visit. The parameters measured were NH3, NO2, NO3, TDN, PN, TDON, TN, OP, TDP, PP, TOP, TP, PC and SS.

Study results were summarized in a draft report in 1982. Following a thorough review of this draft, the report is being completely revised with draft report completion scheduled for September, 1984.

COORDINATOR(S) - Chacko, Gregor

RESOURCES
N/A

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
3002-84 Nutrient Quality of Interjurisdictional Waters in Manitoba

ECS PROGRAM - 1.3 - Water Quality Management Data
DURATION - 1980 to 1985

OBJECTIVES
To summarize, interpret and report on the nutrient data of the interjurisdictional river monitoring sites in Manitoba for the purpose of providing background information.

RATIONALE
The branch recognizes its responsibility to prepare summary and interpretive reports of its historical data base. These reports are primarily intended as background information for data users such as the interested public, scientific community, other government agencies and water resource managers.

DESCRIPTION
The nutrient data base for interjurisdictional river sites in Manitoba for the decade 1970 - 1979 are being summarized and interpreted. Discussion in the report will focus on the general nature and significance of spatial patterns and temporal trends as well as an overall evaluation of the data base. A first draft has been prepared and reviewed. Extensive revision of the report is in progress with a draft planned by April, 1984. This report is intended to serve as a guide for other parameter groups in this and other districts and, as such, will be extensively reviewed and evaluated by the Branch and selected reviewers with respect to the ability of this type of report to meet the needs of its target audience.

COORDINATOR(S) - Chacko, Gregor

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof			0.15		0.15
	PY Tech					
	Salary			6.00		6.00
	O & M			2.00		2.00
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total				0.15		0.15
Total Dollars				8.00		8.00

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
3003-84 Metal Quality of Interjurisdictional Waters in Manitoba

ECS PROGRAM - 1.3 - Water Quality Management Data
DURATION - 1983 to 1985

OBJECTIVES
To summarize, interpret and report on the metal quality of interjurisdictional river monitoring sites in Manitoba

RATIONALE
The Branch recognizes its responsibility to prepare summary and interpretive reports of its historical data base. These reports are primarily intended as background information for data users such as the interested public, scientific community, other government agencies and water resource managers.

DESCRIPTION
The historical metals data base for interjurisdictional sites in Manitoba will be summarized and interpreted along the lines of the format developed in the corresponding nutrient report. The format will, however, be discussed with the province of Manitoba for the purpose of investigating the feasibility of preparing a report jointly with the province on the combined data set. This report is intended to parallel the nutrient report outlined in Project 3002. Therefore, this metals report wil be postponed during FY 84/85 while the nutrient report is being evaluated.

COORDINATOR(S) - Chacko, Gregor

RESOURCES
N/A

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
3004-84 Marmot Research Basin Study

ECS PROGRAM - 1.3 - Water Quality Management Data
DURATION - 1963 to Sept. 1984

OBJECTIVES
To determine if the clearcutting activities which took place in Cabin Creek Basin during 1974 and 1975 had an effect on the quality of Cabin Creek.

RATIONALE
As part of the Alberta Watershed Research Program, the Water Quality Branch was asked to undertake a study to determine the effects on stream water quality of forest cover manipulation in Marmot Creek Basin.

DESCRIPTION
Data collection in the Marmot Basin terminated in 78/79. During 83/84 a draft report describing the effect of the clearcutting was prepared and reviewed internally. During 84/85 the final report will be prepared. In addition a paper discussing the methods of assessing long term data sets will be prepared and presented at the CHS symposium in June.

COORDINATOR(S) - Block

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof			0.20		0.20
	PY Tech			0.05		0.05
	Salary			9.50		9.50
	O & M			3.00		3.00
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total				0.25		0.25
Total Dollars				12.50		12.50

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
3005-84 Comparison of Stream Sampling Methods

ECS PROGRAM - 1.3 - Water Quality Management Data
DURATION - May 1982 to March 1985

OBJECTIVES
Comparison of sampling methods for nutrients and other parameters in terms of load and trend in river systems of the region.

RATIONALE
Over the past decade, a variety of sampling methods have been used by the Water Quality Branch in W & NR. These methods including (1) the continuous (one sample per every 8 hours) sampling using an autosampler, (2) replicate periodic sampling and (3) monthly routine sampling. Their respective merits and limitations need to be evaluated relative to a variety of objectives.

DESCRIPTION
Since sampling is a major concern of the Branch, and the data are already available, these data will be evaluated in terms of nutrient load and trend. Statistical tests, such as comparison of the means, and variance and regression analysis, etc., shall be used in comparing the data. The data need to be carefully reviewed and an appropriate method(s) developed and employed to undertake the comparison.

COORDINATOR(S) - Gregor, Chacko

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof			0.1		0.1
	PY Tech					
	Salary			4.0		4.0
	O & M			10.0		10.0
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total				0.1		0.1
Total Dollars				14.0		14.0

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
3006-84 Red and Souris Rivers Nutrient Assessment

ECS PROGRAM - 1.3 - Water Quality Management Data
DURATION - Ongoing

OBJECTIVES
Assess baseline conditions and the presence of trends for nitrogen and phosphorus in the Red and Souris Rivers at the international border.

RATIONALE
The International Garrision Diversion Study Board in its report to the U.S. and Canadian Governments (1976) indicated that T.D.S., sulphates, hardness, sodium, phosphorous and nitrates would have the most adverse effect on Lake Manitoba and Lake Winnipeg. The Board also expressed concern about the very limited data base for nitrogen. Based on these concerns and based on the Branch mandate for assessing the water quality at the U.S. - Canada border, the Branch initiated a long term DN, PN and TP study in the Red River at Emerson and Souris River near Coulter.

DESCRIPTION
Two automatic samplers collected samples at a frequency of every eight hours from July, 1979 to September, 1982. The samples were refrigerated on site and delivered to the lab where they were composited to provide daily samples. Additional sampling was undertaken as part of a quality evaluation exercise of the composited samples. Routine monthly monitoring was conducted throughout this period as well as intensive monthly cross-sectional sampling over a 12 month period. The data were verified and entered on Naquadat. During 1983/84 the data were reviewed and statistically summarized.

No work will be undertaken on this project during 84/85 due to the heavy workload of the coordinators unless an appropriate contractor can be identified.

COORDINATOR(S) - Gregor, Chacko

RESOURCES
N/A

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
3006-84 Red and Souris Rivers Nutrient Assessment

STATION LIST

Map no.	Station location	NAQUADAT no.	Sampling frequency
12	Souris River at Coulter	00MA05NF0001	V
15	Red River at Emerson	00MA05DC0001	V

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
3007-84 Gu'Appelle Nutrient Loading Study

ECS PROGRAM - 1.3 - Water Quality Management Data
DURATION - April 1980 to June 1984

OBJECTIVES
To determine if management strategies to abate pollution in the Gu'Appelle River Basin correspond with a quantifiable reduction in nutrient loading to and from the Fishing Lakes.

RATIONALE
As part of the Gu'Appelle Implementation Agreement considerable money and effort have been spent to reduce the phosphorus load to the Gu'Appelle Lakes, in the hopes reducing the rate of eutrophication. Unfortunately, no provisions were made to evaluate changes in water quality. Subsequently, the WQB, under agreement to the Board, agreed to study trends in nutrient loading to and from the Fishing Lakes.

DESCRIPTION
Water samples for nutrient analsis were collected at the hydrometric station above and below the Fishing Lakes from April, 1980 to June 1983. Using these results and the WRB flow data, loading into and out of the lakes will be calculated and trends and characteristics assessed. Historical nutrient data from various sources will also be gather to assess the change in nutrient quality of the Gu'Appelle River as a result of nutrient management practices. During 1984/85 the final report will be completed.

COORDINATOR(S) - Munro

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	TOTALS
A Base	PY Prof			0.16		0.16
	PY Tech					
	Salary			5.80		5.80
	O & M			0.50		0.50
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total				0.16		0.16
Total Dollars				6.30		6.30

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
3008-84 Qu'Appelle River Periphyton Productivity Study

ECS PROGRAM - 1.3* - Water Quality Management Data
DURATION - April 1980 to May 1984

OBJECTIVES
To investigate periphyton productivity in the Qu'Appelle River to assess the nutrient quality of the river and to evaluate the use of periphyton as a biomonitoring within the region.

RATIONALE
As part of the Regional Biomonitoring Program, regional assessment of biomonitoring methods is required. This project assesses the use of periphyton productivity biomonitoring and gives information about the nutrient quality of the Qu'Appelle River.

DESCRIPTION
Two stations were established on the Qu'Appelle River, above and below the Fishing Lakes. Periphyton were collected during 1980 and 1981 using artificial substrates. Samples were collected 1, 2, and 3 weeks after the substrates were placed in the river to provide a measurement of the rate of productivity of a well-established mat of periphyton. Samples were analyzed for chlorophyll - a, and ash free weight. A report will be completed during 1984-85

COORDINATOR(S) - D. Munro

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof			0.11		0.11
	PY Tech					
	Salary			3.80		3.80
	O & M			0.50		0.50
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total				0.11		0.11
Total Dollars				4.30		4.30

* Affiliated ECS Program(s) - 1.1

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
3009-84 Assesment of Bioaccumulation of Metals

ECS PROGRAM - 1.3* - Water Quality Management Data
DURATION - April 1 to June 1 1984

OBJECTIVES
To examine the use of clam and sport fish population as a tool for assessing the presence of metals in the aquatic environment.

RATIONALE
As part of the Regional Biological Monitoring Program some regional assessment of biomonitoring methods are required. This project is to assess the use of clams and fish as indicators of contaminants and their possible use as a biomonitoring tool. In addition, the study gives information on the presence of contaminants in the Qu'Appelle and Montreal Rivers.

DESCRIPTION
During the summer of 1978, selected tissues of clams and of four fish species were monitored for the bioaccumulation of PCB's, chlorinated hydrocarbons (insecticide group), Hg, Se, As, Cd, Cu and Pb. The results of this assessment were presented at the PAR Conference in 1981. Based on the results of the metal analysis, two draft reports were initiated but never completed. These metal reports will be redrafted to produce a final report.

COORDINATOR(S) - D. Munro

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof			0.12		0.12
	PY Tech					
	Salary			4.20		4.20
	O & M			0.50		0.50
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total				0.12		0.12
Total Dollars				4.70		4.70

* Affiliated ECS Program(s) - 4.1

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
3010-84 Evaluation of Sampling Methods

ECS PROGRAM - 1.3* - Water Quality Management Data
DURATION - April 1980 to October 1984

OBJECTIVES
To compare the results obtained using present Branch sampling techniques to those obtained using the equal discharge increment method.

RATIONALE
Metals, nutrients and organics are important in Branch programs and may be influenced by the presence of suspended sediment. Since the present sampling techniques were not designed to collect representative suspended sediment samples, the technique needs to be evaluated.

DESCRIPTION
An accepted procedure for collecting suspended sediment is the equal discharge increment (EDI) method. For this study, the EDI method will be compared to present Branch methods. The field work for the study was carried out in FY 80/81. During 83/84 the interpretation of the data was undertaken and a draft of the report was completed. During 84/85 the final report will be completed and published.

COORDINATOR(S) - Block

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	TOTALS
A Base	PY Prof			0.09		0.09
	PY Tech			0.05		0.05
	Salary			4.70		4.70
	O & M			2.00		2.00
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total				0.14		0.14
Total Dollars				6.70		6.70

* Affiliated ECS Program(s) - 1.1, 4.1

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
3011-84 Red River Automonitor Data Review

ECS PROGRAM - 1.1 - Interjurisdictional Water Management
DURATION - 1984/85

OBJECTIVES
To enter all Red River automonitor data on the Branch computer, evaluate this data and prepare a detailed report outline.

RATIONALE
Under International Joint Commission (IJC) directives, the Water Quality Branch operates a continuous water quality monitor on the Red River at Emerson. Along with the continuous monitor data, monthly samples are collected. After 13 years, a large data base is available and the assessment of these data is a priority of the Branch.

DESCRIPTION
Since 1971, the Branch has operated a continuous monitor at Emerson, Manitoba. Parameters measured are: DO, pH, conductivity, chlorides and temperature. With very few exceptions, the monitor has operated on a continuous basis; acquiring more than 95% of the intended data base. This data base is not only useful in evaluating IJC objectives but is valuable in assessing the water quality of the Red River during this period. These data will be entered on the Branch computer and a detailed report outline will be prepared for interpreting the many years of continuous data.

COORDINATOR(S) - D. Gregor, V. Chacko

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof			0.15		0.15
	PY Tech			0.05		0.05
	Salary			7.75		7.75
	O & M			3.00		3.00
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total				0.20		0.20
Total Dollars				10.75		10.75

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
3012-84 Report on Field Quality Control

ECS PROGRAM - 1.3 - Water Quality Management Data
DURATION - 1984 April to 1985 March

OBJECTIVES
The objectives of this report is to estimate the precision of the water quality measurements made over the last few years and to investigate any cases of particularly poor precision in order to identify ways of improving the precision of the data the Branch produces.

RATIONALE
The Branch is committed to providing the best data on water quality that it can practically achieve. However running an operational quality control project is not effective without a periodic evaluation of the data and audit of the project.

DESCRIPTION
The report will cover the data collected under project 330 since its inception. The treatment will follow that used in the paper "Initial Quality Control Results from a Canadian Water Quality Assessment Network" presented to the Third Biennial Plains Aquatic Research Conference.

COORDINATOR(S) - Guilbault

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof			0.2		0.2
	PY Tech					
	Salary			8.0		8.0
	O & M			1.0		1.0
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total				0.2		0.2
Total Dollars				9.0		9.0

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
3013-84 Mercury Mobility Following Instream Dredging

ECS PROGRAM - 4.1 - Toxic Chemicals
DURATION - March 1982 to June 1984

OBJECTIVES
To determine if dredging of Thunder Creek at Moose Jaw, Saskatchewan resulted in mobilization of mercury to recieving waters during the annual high flow spring period.

RATIONALE
A similar study was conducted in the spring of 1979 at which time mercury transport was observed and attributed to the erosion of contaminated deposits in Thunder Creek. Dredging of Thunder Creek commenced September 14, 1981. Using the 1979 data base, a comparison will be made to the results from the 1982 spring runoff period.

DESCRIPTION
Depth integrated samples were collected daily from three locations in the Moose Jaw River Basin during spring run-off, 1982. The samples were analyzed for total mercury, dissolved mercury, and NFR. In addition, WRB analyzed samples for total suspended solids and particle size distribution, and proved daily discharges for the Moose Jaw River sites. The results of the 1982 work were compared to data gathered during 1979.

COORDINATOR(S) - Crosley

RESOURCES
N/A

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
3014-84 Development of a Biological Data Storage System

ECS PROGRAM - 1.3 - Water Quality Management Data
DURATION - April 1984 to March 1985

OBJECTIVES
To develop a computerized data storage system and procedure for storing data generated from biological studies conducted by the Water Quality Branch in the Region.

RATIONALE
The Water Quality Branch in the Western and Northern Region believes that all the data generated in the Region should be electronically stored. With the increasing emphasis being placed on biological monitoring in the Region, an increasing volume of biological data is being generated. This data does not lend itself to computerized storage by the methods presently in use for storage of water chemistry data, therefore a storage procedure for biological data must be developed.

DESCRIPTION
There are three steps in the development of the facility to store biological information. The first is the preparation of a parameter code dictionary. The second is the development of a data entry procedure since existing software is inadequate. The final step is documenting the facility for use.

COORDINATOR(S) - Dave Munro and Ray Guilbault

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof			0.08		0.08
	PY Tech					
	Salary			3.00		3.00
	O & M			0.20		0.20
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total				0.08		0.08
Total Dollars				3.20		3.20

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
3015-84 Water Quality Data Reports

ECS PROGRAM - 1.3 - Water Quality Management Data
DURATION - Ongoing

OBJECTIVES
To publish detailed water quality data reports for Alberta, Saskatchewan, Manitoba and the Northwest Territories.

RATIONALE
Data from the Branch monitoring measurement and assessment programs should be made readily available to data users, including the public, the scientific community and other government agencies.

DESCRIPTION
Data from monitoring, measurement and assessment programs are verified and stored on NAQUADAT. These data are published on a semi-annual basis in provincial and territorial data reports.

COORDINATOR(S) - Block (Alta & NWT), Crosley (Sask), Chacko (Man)

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof			0.20		0.20
	PY Tech			0.14		0.14
	Salary			12.60		12.60
	O & M			12.00		12.00
	Capital					
Recov.	PY Prof					
	PY Tech					
	Salary					
	O & M					
	Capital					
PY Total				0.34		0.34
Total Dollars				24.60		24.60

WATER QUALITY BRANCH - WNR - PROGRAM OUTLINE - 1984/85
3098-84 Electronic Data Processing Coordination

ECS PROGRAM - 1.3* - Water Quality Management Data
DURATION - Ongoing since 1980

OBJECTIVES
To coordinate EDP activities within the Branch to ensure the orderly implementation and operation of EDP facilities.

RATIONALE
The Western and Northern Region Water Quality Branch is expanding its use of electronic data processing to enhance its data management and interpretation capabilities. In order to coordinate these activities, and attempt to see that the Branch EDP resources are used effectively, this project has been established as an umbrella.

DESCRIPTION
This project covers those electronic data processing (EDP) activities which are not project specific. The operation, maintenance, development and management of the Branch's EDP resources are overhead activities in that they benefit all projects which use EDP resources. The recoverable PY's shown in the Resources table cover summer student and Environment 2000 support.

COORDINATOR(S) - Guilbault

RESOURCES

Category		Nat Lab	Reg Lab	Field	Admin.	Totals
A Base	PY Prof		0.1	1.10	0.05	1.25
	PY Tech		0.5			0.50
	Salary		17.0	43.50	2.50	63.00
	O & M			84.80		84.80
	Capital			43.00		43.00
Recov.	PY Prof					
	PY Tech			0.73		0.73
	Salary			13.30		13.30
	O & M					
	Capital					
PY Total			0.6	1.83	0.05	2.48
Total Dollars			17.0	184.60	2.50	204.10

* Affiliated ECS Program(s) - 1.1, 4.1

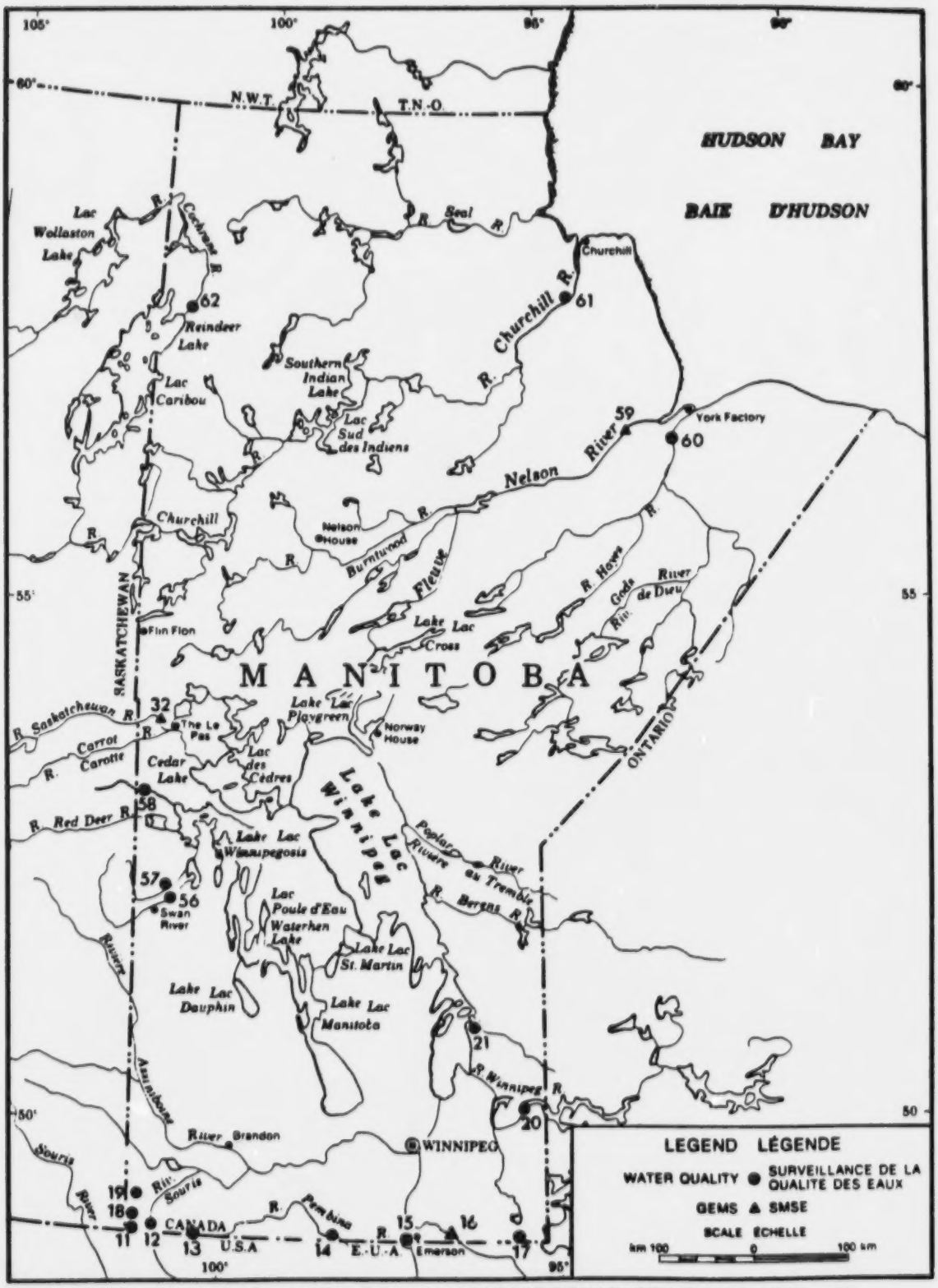


FIGURE 12 WATER QUALITY BRANCH MONITORING STATIONS 1984-85
STATIONS DE SURVEILLANCE DE LA DIRECTION DE LA QUALITÉ DES EAUX 1984-85

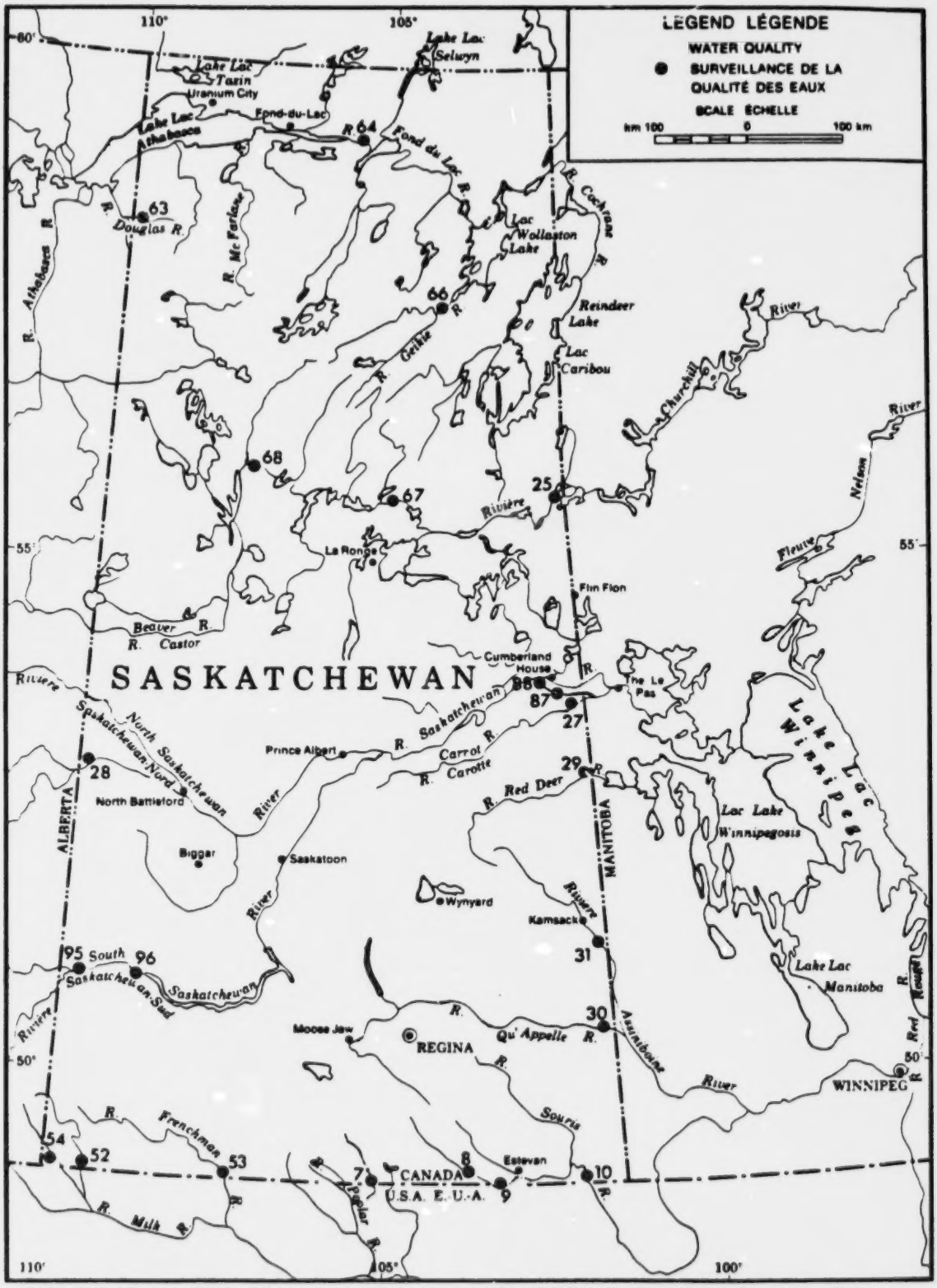


FIGURE 13 WATER QUALITY BRANCH MONITORING STATIONS 1984-85
STATIONS DE SURVEILLANCE DE LA DIRECTION DE LA QUALITÉ DES EAUX 1984-85

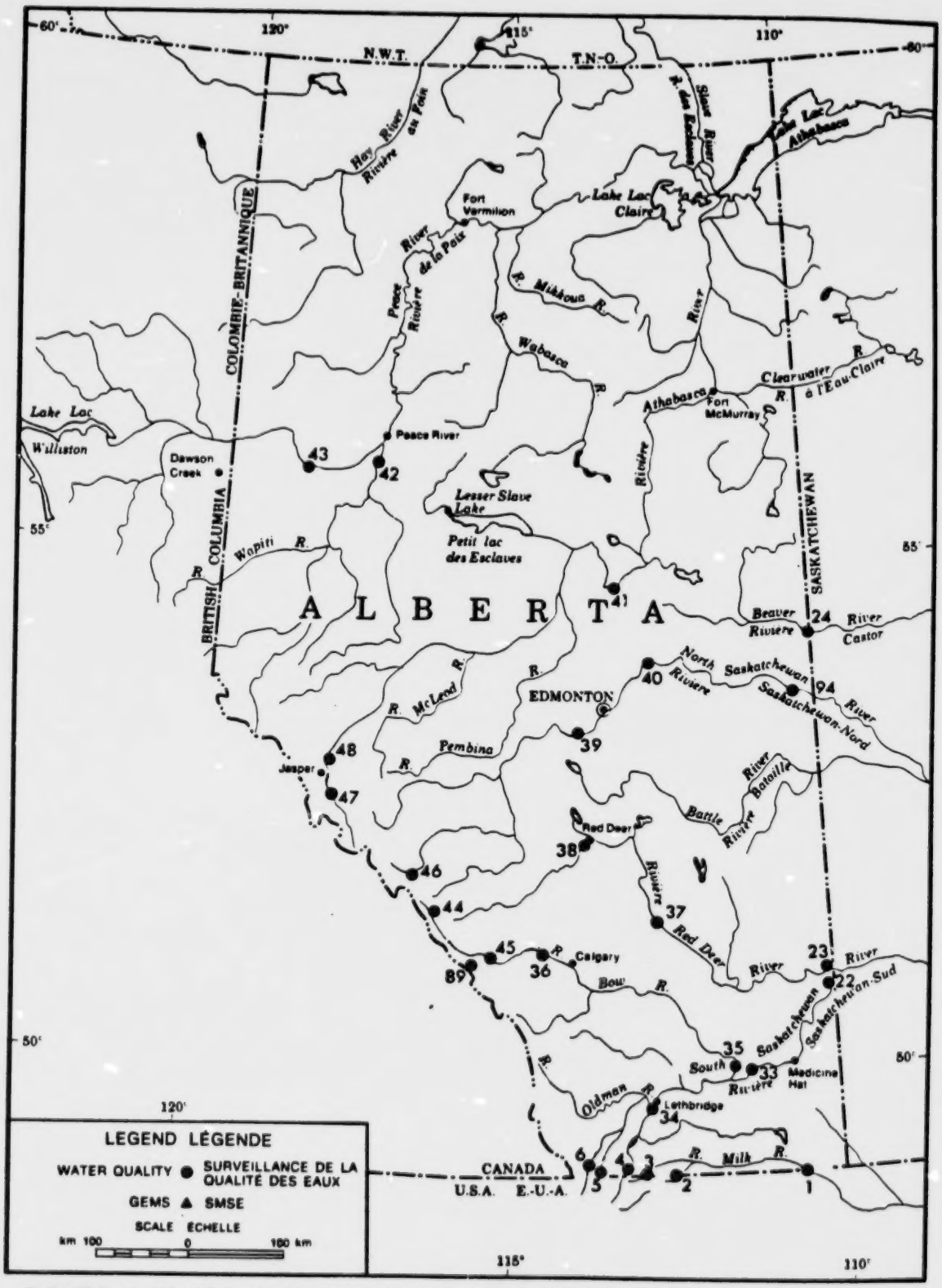


FIGURE 14 WATER QUALITY BRANCH MONITORING STATIONS 1984 - 85
STATIONS DE SURVEILLANCE DE LA DIRECTION DE LA QUALITÉ DES EAUX 1984 - 85

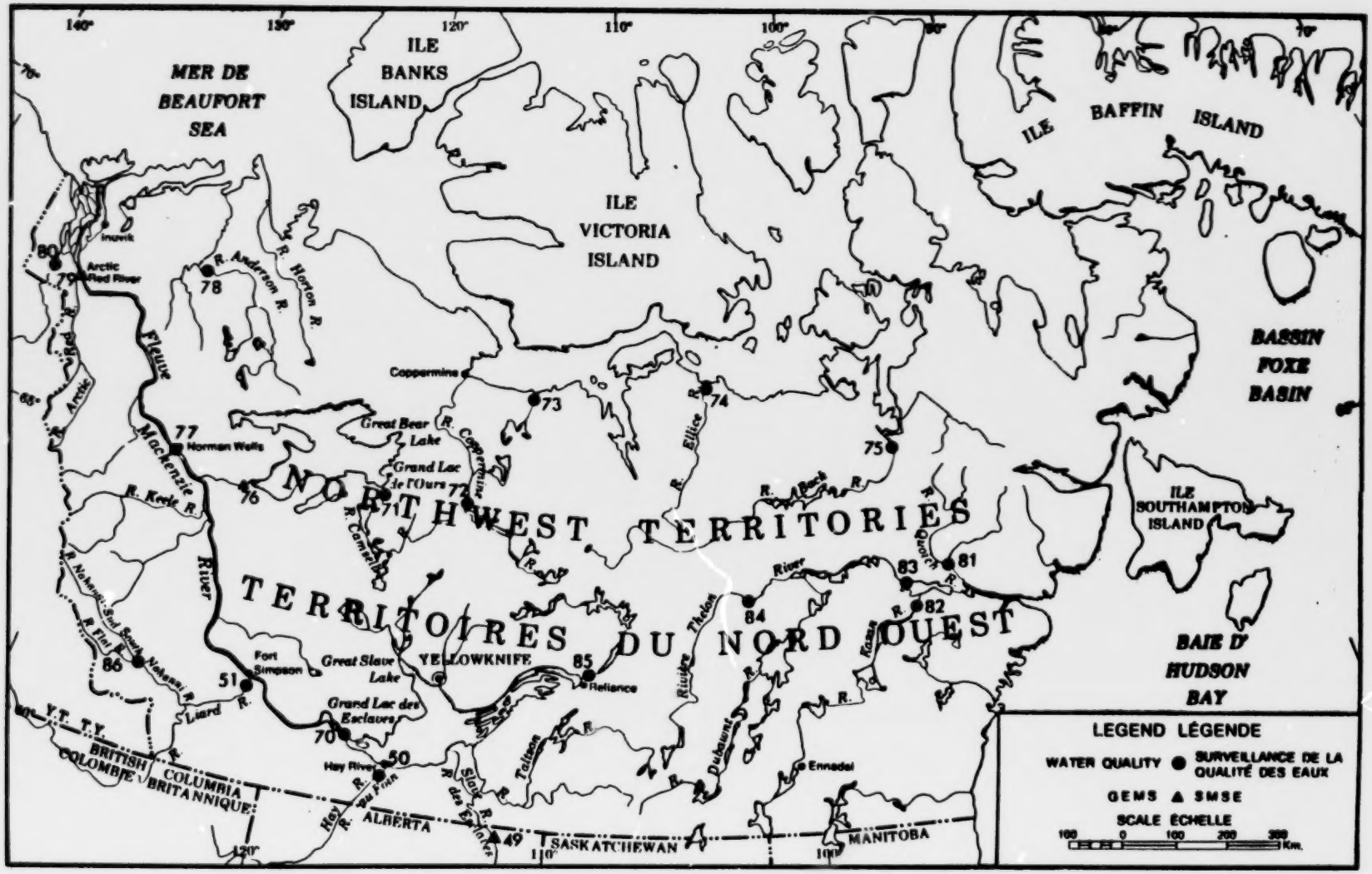


FIGURE 15 WATER QUALITY BRANCH MONITORING STATIONS 1984-85
STATIONS DE SURVEILLANCE DE LA DIRECTION DE LA QUALITÉ DES EAUX 1984-85

D.5 PACIFIC AND YUKON REGION

REGION DU PACIFIQUE ET DU YUKON

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984-85

Region: P&Y
Project Number: 01

PROJECT TITLE: BRANCH SUPPORT

Project Coordinator: W.E. Erlebach
Project Alternate(s): D.D. MacDonald

ECS NATIONAL PROGRAM NAME: Water Quality Management Data ECS CODE: 1.3

Goals: To provide common services to facilitate operations within the Branch.

Rationale: In order to maintain control over expenditures not directly attributable to specific projects, common services have been grouped in a Support Service category.

Description: Training, conferences, journal subscriptions and library stock will be supported at an appropriate level to ensure the availability of opportunities to maintain Branch expertise. Hydro and communication systems are provided, including telephones, telecopiers, etc. Secretarial and technical support not specific to other projects, together with general management and planning functions are included. Fleet management, including gas/oil and maintenance services, will also be provided.

RESOURCES: ($'000)

PY Tech. and Admin.	2.0
PY Professional	1.0
Total PY	3.0
Salary	104.1
O&M	43.7
Contracts	0.0
Capital	18.0
Total	165.8

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984-85

Region: P&Y
Project Number: 02

PROJECT TITLE: WATER QUALITY OBJECTIVES
Project Coordinator: D. Valiela
Project Alternate(s): W.E. Erlebach, L.J. Zeman

ECS NATIONAL PROGRAM NAME: Canada-U.S. and Inter-jurisdictional Water Management/Water Quality Management Data
ECS CODE: 1.1/1.3

Goals: To provide management with information for negotiating, establishing and maintaining water quality ojectives on rivers where federal interest dictates by identifying uses, pollution, and its sources. To determine trends in aquatic environmental quality and assess conformity with water quality requirements used to control municipal and industrial discharges to receiving waters.

Rationale: By participating in the development of Water Quality Objectives on international, interprovincial and interjurisdictional waters within the region the Water Quality Branch is promoting the wise use of that resource.

Description:

a. Review provincial WQO documents from a federal point of view as received.

b. Develop concepts and approaches to collect the information and water quality data necessary to establish WQO's.

c. By March 31, 1985 complete document to HQ on provincial activities in setting WQO's in various sub-basins in the Province of B.C.

RESOURCES: ($'000)

PY Technical	0.0
PY Professional	0.5
Total PY	0.5
Salary	17.4
O&M	4.3
Contracts	0.0
Capital	0.0
Total	21.7

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984-85

Region: P&Y
Project Number: 03

PROJECT TITLE: FLATHEAD RIVER WQB'S
Project Coordinator: D. Valiela
Project Alternate(s): D.D. MacDonald

ECS NATIONAL PROGRAM NAME: Canada-U.S. and Interjurisdictional Water Management
ECS CODE: 1.1

Goals: To provide management with information for negotiating, establishing and maintaining Water Quality Objectives on the Flathead River by identifying ambient levels and trends for key water quality variables. Provide information on the possible impact of development on water quality in the river.

Rationale: Impending development of coal resources in the Flathead River watershed is perceived as having considerable potential for impact on downstream users in the State of Montana through degradation of water quality. By participating in the formulation of WQO's for the Flathead, the Branch is promoting the wise use of that resource, and minimizing the potential for an international dispute.

Description: Using concepts and approaches developed, collect the information and water quality data necessary to establish Water Quality Objectives for the Flathead River.

RESOURCES: ($'000)

PY Technical	0.0
PY Professional	1.0
Total PY	1.0
Salary	34.7
O&M	11.9
Contracts	0.0
Capital	0.0
Total	46.6

STATION DESCRIPTION

Project No. 03

MAP NUMBER	STATION LOCATION	NAQUADAT NUMBER	SAMPLING FREQUENCY	PARAMETERS
1	Flathead River 0.2 miles above USA/Canada Border	00BC08NP0003	20	Nutrients Metals, NFR
2	Flathead River 0.8 miles east of Marl Lake	00BC08NP0002	20	Nutrients Metals, NFR
3	Howell Creek 0.75 km above Flathead River Confluence	00BC08NP0008	20	Nutrients Metals, NFR
4	Howell Creek 0.25 miles above Cabin Creek Confluence	00BC08NP0004	1-3	NFR
5	Cabin Creek 0.25 miles above Howell Creek Confluence	00BC08NP0010	1-3	NFR

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984-85

Region: P&Y
Project Number: 04

PROJECT TITLE: SIMILKAMEEN RIVER WQO'S
Project Coordinator: L.J. Zeman
Project Alternate(s): D.D. MacDonald

ECS NATIONAL PROGRAM NAME: Canada-U.S. and Interjurisdictional Water Management
ECS CODE: 1.1

Goals: To develop an understanding of water quality and land and water use, and pollutant - aquatic environment interactions to facilitate the setting of water quality objectives specific to the border reach of the Similkameen River.

Rationale: As a significant Interior Plateau stream, the Similkameen River is subject to heavy pollutant loadings from agricultural, urban and particularily mining sources. By understanding the human and environmental risks associated with the amounts and forms of toxic chemicals released into the river the Branch can effectively establish WQO's that promote the wise development of the aquatic resource, and thereby minimize the impact of that development on downstream users in the State of Washington.

Description: Using the appropriate concepts and approaches, collect information and water quality data necesssary to establish site specific Water Quality Objectives for the Similkameen River.

RESOURCES: ($'000)

PY Technical	0.0
PY Professional	1.0
Total PY	1.0
Salary	34.7
O&M	1.6
Contracts	5.0
Capital	0.0
Total	41.3

STATION DESCRIPTION

Project No. 04

MAP NUMBER	STATION LOCATION	NAQUADAT NUMBER	SAMPLING FREQUENCY	PARAMETERS
6	Similkameen River at Hwy 3 Bridge, Princeton	00BC08NL0001		Metals Nutrients Organics
7	Similkameen River above 20 Mile Creek	00BC08NL0008		Metals Nutrients Organics
8	Similkameen River at Border	00BC08NN0005		Metals Nutients Organics
82	Henri Creek ab. Confluence with Similkameen River			Metals Nutrients Organics

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984-85

Region: P&Y
Project Number: 05

PROJECT TITLE: SURVEYS - HEADQUARTERS WORK
Project Coordinator: L.M. Churchland
Project Alternate(s): W.E. Erlebach

ECS NATIONAL PROGRAM NAME: Water Quality Management Data ECS CODE: 1.3

Goals: To provide professional advice and a regional perspective to management in developing national strategies for water quality surveys.

Rationale: By providing input into policy decisions at the national level, the Branch is ensuring that Regional concerns are being considered and effectively addressed.

Description: Attend two meetings of the Surveys Division and provide input, as required, to Surveys Divisions requests.

RESOURCES: ($'000)

PY Technical	0.0
PY Professional	0.2
Total PY	0.2
Salary	6.9
O&M	2.5
Contracts	0.0
Capital	0.0
Total	9.4

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984-85

Region: P&Y
Project Number: 06

PROJECT TITLE: STIKINE RIVER
Project Coordinator: L.M. Churchland
Project Alternate(s): C. Thorp

ECS NATIONAL PROGRAM NAME: Water Quality Management Data ECS CODE: 1.3

Goals: To describe current water quality conditions and identify concerns related to the potential impact of dam construction on the Stikine River, which flows from British Columbia into the Alaskan Panhandle. This information will contribute to the design of a long-term monitoring program, the establishment of Water Quality Objectives, and the assessment of environmental changes.

Rationale: The Iskut-Stikine River basin in northwestern B.C. has been identified by the B.C. Hydro and Power Authority as a potential site for hydroelectric development. Officials for the State of Alaska have stated their concerns regarding the impact of this development on downstream ecology; thus the need for a federal response is clearly indicated.

Description: A data report which will include a verified listing of data and a description of field and laboratory procedures will be completed. Statistical analysis of the data including investigation of cross sectional variability, seasonal variability, factor and cluster analysis, and comparison of conditions in sloughs and main channels will be completed. Data interpretation will be initiated with draft preparation of one or more scientific papers, and a draft interpretive report will approach completion. A report will be prepared on the use of the non-filterable residue technique as an estimate of suspended sediment.

RESOURCES: ($'000)

PY Technical	0.0
PY Professional	0.8
Total PY	0.8
Salary	27.8
O&M	2.0
Contracts	4.0
Capital	0.0
Total	33.8

STATION DESCRIPTION

Project No. 06

MAP NUMBER	STATION LOCATION	NAQUADAT NUMBER	SAMPLING FREQUENCY	PARAMETERS
9	Iskut River above Snippaker Creek	00BC08CG0004		50
10	Stikine River below Great Glacier	00BC08CF0002		Nutrients Metals Major Ions
11	Stikine River near Wrangell, Alaska	00AK08CF0001		Field Measurements Phytoplankton
12	Stikine River above Butterfly Creek	00BC08CF0001		Bacteria Mineral Composition
13	Iskut River above Burrage Creek	00BC08CG0003		
14	Iskut River below Johnson River	00BC08CG0001		
15	Stikine River at Telegraph Creek	00BC08CE0001		
16	Stikine River at Highway Bridge	00BC08CB0001		
17	Ningunsaw River near Bob Quinn Lake	00BC08CG0002		

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984-85

Region: P&Y
Project Number: 07

PROJECT TITLE: COLUMBIA RIVER
Project Coordinator: S.W. Sheehan
Project Alternate(s): T.M. Tuominen, L.M. Churchland

ECS NATIONAL PROGRAM NAME: Water Quality Management Data ECS CODE: 1.3

Goals: To identify and establish concerns regarding present conditions and potential problems associated with waste disposal in the aquatic environment, particularily the interrelationship between nutrients, metals and biota.

Rationale: As a major international waterway, the Columbia River has been the subject of a number of intensive water quality surveys over the past five years where particular concerns have been identified in relation to the deposition of potentially toxic materials and nutrients within British Columbia to the possible detriment of downstream users in the State of Washington, USA.

Description: Two data reports are scheduled for completion in 1984-85. These reports will contain data collected on the Columbia River from Birchbank to Waneta for the period 1978-1983. The data to be reported includes the levels of metals and nutrients measured at Waneta and Birchbank to determine vertical, lateral, and temporal variability (1978-1980), and chemical and biological measurements taken for the static bioassay (1980-82). These reports are to be completed prior to preparation of interpretive reports.

RESOURCES: ($'000)

PY Technical	0.0
PY Professional	0.8
Total PY	0.8
Salary	27.7
O&M	0.0
Contracts	25.5
Capital	0.0
Total	53.2

STATION DESCRIPTION

Project No. 07

MAP NUMBER	STATION LOCATION	NAQUADAT NUMBER	SAMPLING FREQUENCY	PARAMETERS
18	Columbia River at Waneta	00BC08NE0001		Major Ions Nutrients, Metals
19	Columbia River at Birchbank	00BC08NE0005		Major Ions Nutrients, Metals
20	Pend D'Oreille at Waneta	00BC08NE0029		Major Ions Nutrients, Metals

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984-85

Region: P&Y
Project Number: 08

PROJECT TITLE: DATA AND INTERPRETIVE REPORTS
Project Coordinator: S.W. Sheehan
Project Alternate(s): T.M. Tuominen, L.M. Churchland

ECS NATIONAL PROGRAM NAME: Water Quality Management Data ECS CODE: 1.3

Goals: To complete and publish data and interpretive reports, including scientific papers on water quality studies, surveys, and related method development including documentation of software.

Rationale: Published reports are an essential form of communication in order that resource managers and their supporting technical staff, other members of the scientific and engineering communities, and the public at large become aware of conditions, trends and developments affecting the aquatic environment.

Description: A document on software for Osborne I will be completed by March 1985. The function of this software is to calculate cell densities, species diversities, and other statistics related to data description. A data report on the Peace River which will contain detailed chemical data will be completed by December 31, 1984. A report containing chemical, algal and invertebrate data for the Flathead River, and two reports (one data and one interpretive report) on the water chemistry and algae in the Akamina-Kishinena watershed, completed in draft form in 1983/84, will be published.

RESOURCES: ($'000)

PY Technical	0.0
PY Professional	0.1
Total PY	0.1
Salary	3.5
O&M	1.9
Contracts	0.0
Capital	0.0
Total	5.4

STATION DESCRIPTION

Project No. 08

MAP NUMBER	STATION LOCATION	NAQUADAT NUMBER	SAMPLING FREQUENCY	PARAMETERS
	Flathead River			
2	Flathead River, 1.5 km east of Marl Lake	00BC08NP0002		
3	Howell Creek, 750 m upstream of the Flathead River - Howell Creek Confluence	00BC08NP0008		
1	Flathead at the International Boundary	00BC08NP0003		
21	Sage Creek, 1.0 km north of Proctor Lake	00BC08NP0006		
22	Flathead River above Pollock Creek Road Bridge	00BC08NP0001		
23	Cabin Creek, 4.5 km above the Confluence with Howell Creek station	00BC08NP0009		
4	Howell Creek, 250 m above the Confluence of Cabin Creek and Howell Creek	00BC08NP0004		
24	Cabin Creek 9.0 km above Confluence with Howell Creek Station 8	00BC08NP0010		
25	Couldry Creek above Confluence with Burham Creek	00BC08NP0007		
	Akamina-Kishinena			
26	Sage Creek at the Border	00BC08NP0011		
27	Kishinena Creek	00BC08NP0013		
28	Elder Creek	00BC08NP0012		
29	Akamina Creek	00BC08NP0014		
	Peace River			
30	Peace River near Taylor	00BC07FA0003		
31	Pine River near Mouth	00BC07FB0001		
32	Beatton R. E. of Ft.St. John	00BC07FC0002		
33	Peace River above Alces R.	00BC07FD0005		
34	Kiskatinaw R. nr Farmington	00BC07FD0007		

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984-85

Region: P&Y
Project Number: 09

PROJECT TITLE: ENVIRONMENTAL REFERRALS
Project Coordinator: S.W. Sheehan
Project Alternate(s): L.M. Churchland

ECS NATIONAL PROGRAM NAME: Water Quality Management Data ECS CODE: 1.3

Goals: To provide professional advice and a Federal perspective on Environmental contamination issues.

Rationale: By providing advice on water quality issues of national significance, the Branch promoting the wise use of aquatic resources.

Description: Advice on water quality concerns will be provided as required to the provincial government, and other Federal agencies, particularly with respect to Cominco, the lead-zinc smelter at Trail, B.C.

RESOURCES: ($'000)

PY Technical	0.0
PY Professional	0.1
Total PY	0.1
Salary	3.5
O&M	1.0
Contracts	0.0
Capital	0.0
Total	4.5

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984-85

Region: P&Y
Project Number: 10

PROJECT TITLE: METAL SPECIATION
Project Coordinator: T.L. Tremblay
Project Alternate(s): F.T.S. Mah

ECS NATIONAL PROGRAM NAME: Water Quality Management Data ECS CODE: 1.3

Goals: To adapt a method for the measurement of various species of one or more potentially toxic metals (such as cadmium, aluminum, copper, lead and zinc) and cyanide, if time permits.

Rationale: Toxic metals (and cyanide) can be present in freshwater and sediments as free ions or in complexes (inorganic or organic). Various chemical species have differential toxicities, so knowledge of their concentrations will help to delineate the biological importance of ambient levels of toxic metals. These measurements will be more significant than total, extractable or dissolved metal concentrations, which have not been correlated to biological toxicities.

Description: A literature review encompassing the speciation of several transition metals and cyanide, and the toxicities of the various chemical species has been initiated. Literature data indicates, generally, that free ions and their weak complexes have higher toxicities than the other species (strong complexes, colloids, particulates), therefore speciation studies are warranted.

Due to the high detection limits associated with polarography, it has been ruled out as a potential technique in this study. Ion-exchange chromatography with a chelating resin (Chelex-100) promises better resolution. This method will be tested at the chemistry laboratory, first with synthetic (standard) water samples and then with natural samples. Subsequently, the method will be adapted for use in the new mobile laboratory. This will permit speciation measurements on site, soon after sample collection, thus the results should more closely reflect the biological availability of toxic metals. In addition, one field trip to a river of federal interest will be made (to be selected according the WQB LTOP).

RESOURCES: ($'000)

PY Technical	0.0
PY Professional	1.0
Total PY	1.0
Salary	34.7
O&M	5.0
Contracts	0.0
Capital	0.0
Total	39.7

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984-85

Region: P&Y
Project Number: 11

PROJECT TITLE: MONITORING - HEADQUARTERS WORK
Project Coordinator: P.H. Whitfield
Project Alternate(s): W.E. Erlebach

ECS NATIONAL PROGRAM NAME: Water Management Data ECS CODE: 1.3

Goals: To provide professional advice and a regional perspective to management in developing national strategies for water quality monitoring.

Rationale: By providing input into policy decisions regarding water quality monitoring at the national level, the Branch is ensuring that Regional concerns are being considered and effectively addressed.

Description: Attend two meetings of the Monitoring Division, and provide input, as required, to the Monitoring Division.

RESOURCES: ($'000)

PY Technical	0.0
PY Professional	0.2
Total PY	0.2
Salary	6.9
O&M	2.5
Contracts	0.0
Capital	0.0
Total	9.4

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984-85

Region: P&Y
Project Number: 12

PROJECT TITLE: ROUTINE WATER QUALITY MONITORING
Project Coordinator: C. Thorp
Project Alternate(s): P.H. Whitfield

ECS NATIONAL PROGRAM NAME: Water Quality Management Data ECS CODE: 1.3

Goals: To provide continuing and pertinent water quality data responding to federal needs and interests, particularly when there is a potential for interjurisdictional disputes.

Rationale: A national overview of water quality conditions in priority river basins which can be used to respond to federal needs in developing general policy and legislation is required. Sampling at selected stations on a continuing basis also exhibits the federal presence and concern for water quality.

Description: Routine monitoring of a specific set of water quality variables at 33 sites on interjurisdictional, international (transboundary), interprovincial and provincial-territorial reaches will be done with the cooperation of the Water Resources Branch and other agencies.

RESOURCES: ($'000)

PY Technical	0.0
PY Professional	0.4
Total PY	0.4
Salary	13.9
O&M	12.0
Contracts	0.0
Capital	0.0
Total	25.9

STATION DESCRIPTION

Project No. 12

MAP NUMBER	STATION LOCATION	NAQUADAT NUMBER	SAMPLING FREQUENCY	PARAMETERS
35	Fraser River at Hope *GEMS*	00BC08MF0001	10-12	Metals Nutrients Major Ions
36	Sumas River at Huntington	00BC08MH0027	8	Metals Nutrients Major Ions
1	Flathead River at Int. Bdy.	00BC08NP0003	7-8	Metals Nutrients Major Ions
37	Moyie River at Kingsgate	00BC08NH0010	6	Metals Nutrients Major Ions
38	Kootenay River at Wardner	00BC08NG0002	6	Metals Nutrients Major Ions
39	Kootenay River at Nick's Isl.	00BC08NH0005	6	Metals Nutrients Major Ions
40	Elk River at Philip's Bridge	00BC08NK0002	7-8	Metals Nutrients Major Ions
21	Sage Creek at Road Bridge	00BC08NP0006	6	Metals Nutrients Major Ions
41	Big Sheep Creek @ Hwy. Bridge	00BC08NE0010	6	Metals Nutrients Major Ions
42	Kettle River at Gilpin Foot Bridge	00BC08NN0022	6	Metals Nutrients Major Ions
43	Kettle River at Carson	00BC08NN0021	5	Metals Nutrients Major Ions
44	Kettle River at Midway	00BC08NN0011	6 Lay 52	Metals Nutrients Major Ions
45	Boundary Creek at Midway	00BC08NN0010	6	Metals Nutrients Major Ions
8	Similkameen River near International Boundary	00BC08NL0005	6	Metals Nutrients Major Ions
46	Okanagan River at Oliver	00BC08NM0001	8	Metals Nutrients Major Ions
47	Skagit River 2 km North of Boundary Obelisk	00BC08PA0001	4	Metals Nutrients Major Ions
48	Pend-D'Oreille River below International Boundary	00BC08NE0020	4	Metals Nutrients Major Ions
20	Pend-D'Oreille River at Waneta	00BC08NE0029	6	Metals Nutrients Major Ions

STATION DESCRIPTION

Project No. 12 (Con't)

MAP NUMBER	STATION LOCATION	NAQUADAT NUMBER	SAMPLING FREQUENCY	PARAMETERS
49	Salmon River near Hyder Alaska	00AK08DC0001	52	Metals Nutrients Major Ions
50	Yukon River at Eagle Alaska	00AK09ED0001	50-52	Metals Nutrients Major Ions
18	Columbia River at Waneta	00BC08NE0001	5 Lay 52	Metals Nutrients Major Ions
19	Columbia River at Birchbank	00BC08NE0005	6 Lay 52	Metals Nutrients Major Ions
14	Iskut River below Johnson R	00BC08CG0001	6-7	Metals Nutrients Major Ions
10	Stikine River above Choquette River	00BC08CF0002	6-7	Metals Nutrients Major Ions
11	Stikine River near Wrangell, Alaska	00AK08CF0001	6	Metals Nutrients Major Ions
51	Little Sheep Creek at International Boundary	00BC08NE0011	12	Metals Nutrients Major Ions
52	Little Sheep Creek at Guide Camp Road	00BC08NE0013	52	Metals Nutrients Major Ions
53	Swift River at W.R.B. Station	00BC09AE0009	6	Metals Nutrients Major Ions
54	Teslin River at Johnson's Crossing	00YT09AE0001	6	Metals Nutrients Major Ions
55	Bear River at Stewart	00BC08DC0001	12-18	Metals Nutrients Major Ions
56	Liard River at Upper Crossing	00YT10AA0001	6	Metals Nutrients Major Ions
57	Liard River at Lower Crossing	00BC10BE0004	7	Metals Nutrients Major Ions
33	Peace River above Alces River	00BC07FD0005	6-8	Metals Nutrients Major Ions

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984-85

Region: P&Y
Project Number: 13

PROJECT TITLE: FEDERAL-PROVINCIAL AGREEMENTS
Project Coordinator: P.H. Whitfield
Project Alternate(s): W.E. Erlebach

ECS NATIONAL PROGRAM NAME: Water Quality Management Data ECS CODE: 1.3

Goals: Assist and participate in negotiations with the Province of British Columbia for a cost-shared water quality agreement.

Rationale: Support of the federal policy to integrate with the provinces to provide complete and harmonized data for basins across Canada on a cost-shared basis will respond to specific federal requirements and reduce the potential for duplicating the expenditure of effort and resources by the two levels of government.

Description: Formulation of a list of joint monitoring stations, and variables to be measured, and development of monitoring strategies suitable to meet the monitoring objectives at each site will be expedited through discussions with provincial representatives.

RESOURCES: ($'000)

PY Technical	0.0
PY Professional	0.2
Total PY	0.2
Salary	6.9
O&M	0.3
Contracts	0.0
Capital	0.0
Total	7.2

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984-85

Region: P&Y
Project Number: 14

PROJECT TITLE: MONITORING SITE EVALUATIONS
Project Coordinator: C. Thorp
Project Alternate(s): P.H. Whitfield

ECS NATIONAL PROGRAM NAME: Water Quality Management Data ECS CODE: 1.3

Goals: To provide quality assurance for routine monitoring sites by ensuring that representative and valid data are being gathered at each site.

Rationale: Maintaining a high standard of data, to be used to respond to federal needs for supporting water quality management, will ensure the credibility of federal decision making processes.

Description: A station evaluation study on the Kettle River to establish confidence limits for data, by investigation of spatial and temporal variation of water quality parameters at the Kettle River monitoring sites, is to be completed. A quality control study on the use of a specific ampoule for the transportation of sample preservatives in the field will be undertaken. Reconnaissance on the Liard River to establish monitoring sites and to overcome logistical problems associated with sampling will also be undertaken.

RESOURCES: ($'000)

PY Technical	0.0
PY Professional	0.5
Total PY	0.5
Salary	17.4
O&M	3.5
Contracts	0.0
Capital	0.0
Total	20.9

STATION DESCRIPTION

Project No. 14

MAP NUMBER	STATION LOCATION	NAQUADAT NUMBER	SAMPLING FREQUENCY	PARAMETERS
44	Kettle River at Midway	00BC08NN0011		
43	Kettle River at Carson	00BC08NN0021		
42	Kettle River at Gilpin Foot Bridge	00BC08NN0022		
68	Liard River at Fort Liard	00NW10ED0001		

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984-85

Region: P&Y
Project Number: 15

PROJECT TITLE: YUKON RIVER BASIN STUDY
Project Coordinator: P.H. Whitfield
Project Alternate(s): B. McNaughton

ECS NATIONAL PROGRAM NAME: Water Quality Management Data ECS CODE: 1.3

Goals: To provide assistance in the preparation of the final report of the Yukon River Basin Study Committee.

Rationale: This work supports programs developed as part of a Canada Water Act study of the Yukon River Basin.

Description: Input will be provided on an as required basis to the Yukon River Basin Study Directors office.

RESOURCES: ($'000)

PY Technical	0.0
PY Professional	0.3
Total PY	0.3
Salary	10.4
O&M	1.0
Contracts	0.0
Capital	0.0
Total	11.4

STATION DESCRIPTION

Project No. 15

MAP NUMBER	STATION LOCATION	NAQUADAT NUMBER	SAMPLING FREQUENCY	PARAMETERS
69	Takhini River at Takhini R. Campground - 5 kms NNE of Kusawa Lake, Y.T.	00YT09AC0002		Major Ions Oxygen-(Dissolved) Organics Field Measurements
70	Takhini River at Mendenhall Landing - Upstream of Confluence with Mendenhall R.	00YT09AC0003		
71	Takhini River at Alaska Hwy Bridge	00YT09AC0001		
72	Takhini River at Old Dawson Road - 27 kms NW of Whitehorse, Y.T.	00YT09AC0004		
73	Takhini River at Klondike Hwy. 300 m Upstream of Confluence with Yukon River	00YT09AB0009		
74	Nordenskiold River 4.8 kms south of Carmacks. Y.T. Klondike Hwy. km Post 353	00YT09AH0013		
75	Nordenskiold River 14.1 kms SSE of Carmacks. Y.T. Klondike Hwy. km Post 342	00YT09AH0014		
76	Nordenskiold River 27.4 kms SSE of Carmacks. Y.T. Klondike Hwy. km Post 328	00YT09AH0015		
77	Nordenskiold River 38.6 kms SSE of Carmacks. Y.T. Klondike Hwy. km Post 317	00YT09AH0016		
78	Nordenskiold River 2.0 kms NW of Carmacks. 200 m Upstream of Confluence with Yukon R	00YT09AH0012		

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984-85

Region: P&Y
Project Number: 16

PROJECT TITLE: KOOTENAY RIVER EAST
Project Coordinator: P.H. Whitfield
Project Alternate(s): B. McNaughton

ECS NATIONAL PROGRAM NAME: Water Quality Management Data ECS CODE: 1.3

Goals: To evaluate the impact of point source pollution from industrial sources and identify trends within the Kootenay River East sub-basin.

Rationale: The portion of the Kootenay River under consideration feeds into Lake Koocanusa, an international body of water. Concerns relate to the potential for dispute arising from upstream activities within British Columbia impinging on the quality of this international waterway.

Description: The two remaining reports associated with this study will be completed (only if workload generated by Yukon Basin Study is minimal). These reports deal with the recommendations for long term monitoring and nutrient loadings in the sub-basin respectively.

*RESOURCES: ($'000)

PY Technical	0.0
PY Professional	0.8
Total PY	0.8
Salary	27.8
O&M	4.0
Contracts	0.0
Capital	0.0
Total	31.8

*Completion of this project is contingent on receipt of additional resources

STATION DESCRIPTION

Project No. 16

MAP NUMBER	STATION LOCATION	NAQUADAT NUMBER	SAMPLING FREQUENCY	PARAMETERS
	Kootenay River			
58	Kootenay River at Canal Flats	00BC08NF0006		
59	Kootenay River at Skookumchuk	00BC08NG0007		20 Major Ions Nutrients Organics Field Measurements
60	Kootenay River at Wasa	00BC08NG0003		
61	St. Mary's River at St. Eugene Mission	00BC08NG0004		
62	Bull River at Bull River	00BC08NG0008		
38	Kootenay River at Wardner	00BC08NG0002		
63	Elk River at Highway 93	00BC08NK0003		

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984-85

Region: P&Y
Project Number: 17

PROJECT TITLE: GENERAL COMPUTER SERVICES
Project Coordinator: P.H. Whitfield
Project Alternate(s): W.Q. Interpretation Officer

ECS NATIONAL PROGRAM NAME: Water Quality Management Data ECS CODE: 1.3

Goals: To provide common computer services to facilitate the working operations of the Branch.

Rationale: Since initiating this computer services project our capability has been enhanced by the acquisition of in-house terminals with access to University facilities. The Branch is in a position to negotiate a favourable contract with these institutions, thereby controlling expenditures, and developing the expertise with direction for appropriate use.

Description: Computer processing of water quality data will be supported through provision of software and systems utilities. WQB staff will be trained on the use of the message, conference, and graphics systems. A demonstration data base using Oracle will be developed, and a report on the potential for full implementation will be completed. A textform layout suitable for generation of reports will be developed and reported on. A report will be prepared on the procedure for transferring documents from the Wang system to the mainframe.

A system that allows direct input and retrieval of NAQUADAT information will be developed. Laboratory data management functions, will be performed and a level of process control for Branch computing activities will be maintained.

RESOURCES: ($'000)

PY Technical	0.0
PY Professional	1.0
Total PY	1.0
Salary	34.7
O&M	26.0
Contracts	0.0
Capital	0.0
Total	60.7

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984-85

Region: P&Y
Project Number: 18

PROJECT TITLE: SATELLITE DATA ACQUISITION
Project Coordinator: P.H. Whitfield
Project Alternate(s): B. McNaughton

ECS NATIONAL PROGRAM NAME: Water Quality Management Data ECS CODE: 1.3

Goals: To establish a satellite data gathering platform to facilitate the testing of new data acquisition technology.

Rationale: There is a potential for reducing the costs of certain monitoring efforts through new technology. Testing and development of this new technology is the first step in realizing potential savings.

Description: Review available information on existing technology and prepare a proposal for acquisition of necessary equipment. Negotiate with Water Resources Branch for the use of a satellite platform for methods development and equipment testing.

RESOURCES: ($'000)

PY Technical	0.0
PY Professional	0.5
Total PY	0.5
Salary	17.4
O&M	1.0
Contracts	0.0
Capital	10.0
Total	28.4

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984-85

Region: P&Y
Project Number: 19

PROJECT TITLE: LABORATORY - HEADQUARTERS WORK
Project Coordinator: F.T.S. Mah
Project Alternate(s): W.E. Erlebach

ECS NATIONAL PROGRAM NAME: Water Quality Management Data ECS CODE: 1.3

Goals: To provide professional advice and a regional perspective to management in developing national strategies for laboratory operations.

Rationale: By providing input into policy decisions, regarding laboratory operations, at the national level, the Branch is ensuring that the Regional requirements for precise water quality data are being met.

Description: Attend meetings of the National Water Quality Laboratory Coordinating Committee, and provide input, as required, to Analytical Services Division requests.

RESOURCES: ($'000)

PY Technical	0.0
PY Professional	0.2
Total PY	0.2
Salary	6.9
O&M	4.0
Contracts	0.0
Capital	0.0
Total	10.9

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984-85

Region: P&Y
Project Number: 20

PROJECT TITLE: LABORATORY MANAGEMENT
Project Coordinator: F.T.S. Mah
Project Alternate(s): G. Kan, T. Tuominen

ECS NATIONAL PROGRAM NAME: Water Quality Management Data ECS CODE: 1.3

Goals: To provide laboratory facilities and services to ensure the continuing capability of the Regional operation and the smooth transfer of designated responsibilities from the Region to Burlington.

Rationale: The management, administration, and common services associated with the Regional laboratory are identified as functions that are required to maintain an adequate capability to meet program needs and to facilitate the smooth transfer of responsibilities to Burlington during the laboratory restructing process.

Description: Common laboratory services provided include the maintenance of the laboratory, utilities, janitorial services, rent and tenant services, shipping and receiving, etc. Administrative functions provided include contracting-out, contracting-in as a service to other government agencies, cost accounting, cost recovery, budget control and technical administration. After the transfer of responsibilities to Burlington, a quality control program will be planned and implemented to ensure that the data produced are accurate and precise.

RESOURCES: ($'000)

PY Technical	0.9
PY Professional	0.1
Total PY	1.0
Salary	34.7
O&M	38.0
Contracts	0.0
Capital	47.0
Total	119.7

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984-85

Region: P&Y
Project Number: 21

PROJECT TITLE: INORGANIC CHEMISTRY
Project Coordinator: F.T.S. Mah
Project Alternate(s): G.Y.P. Kan

ECS NATIONAL PROGRAM NAME: Water Quality Management
Data/Toxic Chemicals ECS CODE: 1.3/4.1

Goals: To provide capability to measure concentrations of inorganic constituents in water, sediment and biota; to conduct quality control programs required for trace metal samples forwarded to Burlington for analysis; to provide advice on monitoring design and data interpretation related to water chemistry.

Rationale: By providing the capability to analyze for inorganic constituents in water, sediment and biota, and instituting quality control programs for samples forwarded to the National Laboratory, the Branch is strengthening its water quality data base, and is thereby providing information that will contribute to the wise use of the water resources in the Region.

Description: Support for inorganic analysis will be provided to Water Quality Branch projects. Quality control samples generated from the submissions to Burlington for analysis will be analyzed.

RESOURCES: ($'000)

PY Technical	0.7
PY Professional	0.1
Total PY	0.8
Salary	27.8
O&M	10.0
Contracts	30.0
Capital	0.0
Total	67.8

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984-85

Region: P&Y
Project Number: 22

PROJECT TITLE: OKANAGAN RIVER
Project Coordinator: G.Y.P. Kan
Project Alternate(s): T.M. Tuominen, F.T.S. Mah

ECS NATIONAL PROGRAM NAME: Toxic Chemicals ECS CODE: 4.1

Goals: To establish the concentrations of toxic chemicals in water, sediment and biota in the Osoyoos reach of the Okanagan River. To determine sinks for those toxic compounds in the aquatic environment.

Rationale: Although the Okanagan Valley, one of the major agricultural districts in the region, is subjected to large applications of pesticides annually, a study has never been conducted to evaluate the fate of these toxic chemicals in the aquatic environment. As an international river and with increasing emphasis on TOCMEP, the monitoring of toxicants in the aquatic eco-system in the Osoyoos reach of the Okanagan River is warranted.

Description: Four field trips will be conducted to collect water, sediment and biota for the analysis of toxic chemicals, with particular emphasis on toxic organics. Seasonal variability in levels of toxic compounds in the Osoyoos reach of the Okanagan River will be examined. Preliminary data review will commence with the completion of the field work associated with this phase of the study.

RESOURCES: ($'000)

PY Technical	0.0
PY Professional	1.0
Total PY	1.0
Salary	34.7
O&M	5.0
Contracts	1.0
Capital	0.0
Total	40.7

STATION DESCRIPTION

Project No. 22

MAP NUMBER	STATION LOCATION	NAQUADAT NUMBER	SAMPLING FREQUENCY	PARAMETERS
64	Okanagan River at No. 22 Rd. Trestle Bridge	00BC08NM0084	4	50 Major Ions Organics Metals in Water, Biota and Sediment
65	Okanagan River Wetlands before entering Osoyoos Lake		4	30 Metals and Organics in Biota and Sediment
66	Okanagan River Between No. 22 Rd. Tressle Bridge and VDS 2		4	30 Metals and Organics in Biota
67	Okanagan River at VDS 1		4	Metals and Organics in Biota

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984-85

Region: P&Y
Project Number: 23

PROJECT TITLE: ORGANIC CHEMISTRY
Project Coordinator: G.Y.P. Kan
Project Alternate(s): F.T.S. Mah

ECS NATIONAL PROGRAM NAME: Toxic Chemicals ECS CODE: 4.1

Goals: To provide expertise on sampling for toxic organic chemicals, such as pesticides and PCB's, to support the programs of the Water Quality Branch. To support quality control programs for samples submitted to the Burlington laboratory for organic analysis and to provide advice and assistance on monitoring and interpretation of data related to toxic organic chemicals.

Rationale: By providing resources, quality control and chemical expertise for the analysis of toxic organic chemicals in the environment, the Branch is promoting the generation of meaningful information that will meet its responsibilities for the toxic chemicals program.

Description: Support in toxic organic chemicals will be provided by:

1) conducting the quality control programs on samples submitted to Burlington for analysis by analyzing splits, spikes, blanks and standards;

2) Preparing samples by extraction and clean-up techniques for shipment to Burlington for analysis, when necessary;

3) Modifying previously developed sampling techniques to meet the needs of the Region;

4) Advising on sampling methodology to be used and interpretation of results;

5) Attending committee meetings and reviewing papers dealing with Toxic Chemicals Programs.

RESOURCES: ($'000)

PY Technical	0.4
PY Professional	0.6
Total PY	1.0
Salary	34.7
O&M	6.0
Contracts	2.0
Capital	0.0
Total	42.7

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984-85

Region: P&Y
Project Number: 24

PROJECT TITLE: BIOLOGY
Project Coordinator: T. Tuominen
Project Alternate(s): F.T.S. Mah

ECS NATIONAL PROGRAM NAME: Toxic Chemicals ECS CODE: 4.1

Goals: To adapt biological techniques for monitoring of water quality and to apply them to surveys of boundary reaches of rivers where problems associated with toxic chemicals may be of concern.

Rationale: The increasing priority given to toxic chemicals, with the advantages of using biological measurements for monitoring these toxicants in the aquatic environment have warranted the assignment of the major portion of the biology field and laboratory resources to the Toxic Chemicals Program.

Description: Biological samples from the Osoyoos reach of the Okanagan River will be collected, identified and prepared for analysis of toxic organic contaminants in the tissues. Other components of this project include the identification and enumeration of biological samples collected from other transboundary areas and the reporting and interpretation of biological data.

RESOURCES: ($'000)

PY Technical	0.0
PY Professional	1.0
Total PY	1.0
Salary	34.7
O&M	5.0
Contracts	27.0
Capital	0.0
Total	66.7

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984-85

Region: P&Y
Project Number: 25

PROJECT TITLE: FRASER RIVER ESTUARY
Project Coordinator: F.T.S. Mah
Project Alternate(s): T. Tuominen, G. Kan

ECS NATIONAL PROGRAM NAME: Toxic Chemicals ECS CODE: 4.1

Goals: To carry out pilot studies required for the measurement of levels of toxic organic compounds in the Fraser River Estuary.

Rationale: The Lower Fraser is the most important area in this Region, both in terms of population and economics. With the exception of the 1983-84 TOXFUND contract on the identification of organic contaminants in sediment and biota, very little work has been done to determine the levels of toxic organics in the Lower Fraser River. In view of the importance of the Lower Fraser, it is warranted to assign resources to the Fraser River Estuary when TOXFUND becomes available.

Description: When and if TOXFUND is available the following work will be conducted:

1) Additional identification of organic contaminants in sediment and biota in Lower Fraser initiated by TOXFUND in 1983-84;

2) Investigate the use of the high volume sampler developed by Water Quality Branch under estuarine conditions in the Lower Fraser;

3) Investigate the feasibility of adapting the appropriate sampler to microprocessor control;

4) Investigate and adapt techniques for sampling of algae for organic analysis under estuarine conditions.

*RESOURCES: ($'000)

PY Technical	0.0
PY Professional	1.5
Total PY	1.5
Salary	52.1
O&M	10.0
Contracts	0.0
TOXFUND	130.0
Capital	0.0
Total	192.1

* This project is contingent on the receipt of TOXFUND resources (130.0K). Funding of this project will result in 1.5 PY's and 10.0K of "A" base being diverted from other Toxic Chemicals projects.

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984-85

Region: P&Y
Project Number: 26

PROJECT TITLE: LABORATORY RELOCATION
Project Coordinator: F.T.S. Mah
Project Alternate(s): W.E. Erlebach

ECS NATIONAL PROGRAM NAME: Water Quality Management Data ECS CODE: 1.3

Goals: To plan for a new laboratory facility to meet Regional needs.

Rationale: By participating in the planning activities associated with the relocation of the Regional laboratory facilities, the Branch is ensuring that the requirements for analytical services will be met.

Description: A new laboratory facility will be planned in conjunction with the Department of Public Works and Facilities Management.

*RESOURCES: ($'000)

PY Technical	0.0
PY Professional	0.2
Total PY	0.2
Salary	6.9
O&M	0.0
Contracts	0.0
Capital	60.0
Total	66.9

* Resources will be diverted to this project only if a strategic plan for relocation is deve'oped by Administration in the 1984-85 fiscal year.

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984-85

Region: P&Y
Project Number: 27

PROJECT TITLE: ENVIRONMENT 2000
Project Coordinator: D.D. MacDonald
Project Alternate(s): C. Thorp, F.T.S. Mah

ECS NATIONAL PROGRAM NAME: Water Quality Management Data ECS CODE: 1.3

Goals: To conserve and enhance British Columbia's freshwater resources and related ecosystems, and promote their wise use through activities which contribute to the expansion of the water quality monitoring data base, and increase public knowledge and awareness of decisions affecting inland waters.

To employ under-represented groups such as Women, Natives and Disabled persons.

Rationale: By measuring and assessing water quality conditions (in basins of significant Federal interest) in British Columbia, the Water Quality Branch of I.W.D. is reflecting increased public and governmental awareness of the need for wise (informed) management of the water resources.

Description: Conservation must be based on sound scientific knowledge in order that rational decisions be made regarding resource utilization. The Water Quality Branch has, therefore, developed an integrated plan to accelerate water quality monitoring activities through the effective use of resources associated with the Environment 2000 program. Personnel will be utilized in all aspects of the data acquisition program, including field preparations, water quality sampling, chemical analysis, quality control, and data handling and interpretation.

RESOURCES: ($'000)

PY Technical	4.2
PY Professional	
Total PY	4.2
Salary	46.0
O&M	29.7
Contracts	0.0
Capital	3.3
Total	79.0

STATION DESCRIPTION

Project No. 27

MAP NUMBER	STATION LOCATION	NAQUADAT NUMBER	SAMPLING FREQUENCY	PARAMETERS
35	Fraser River at Hope *GEMS*	00BC08MF0001	52	Nutrients Metals Major Ions
47	Skagit River 2 km North of Boundary Obelisk	00BC08PA0001	52	Nutrients Metals Major Ions
36	Sumas River at Huntington	00BC08MH0027	52	Nutrients Metals Major Ions
46	Okanagan River at Oliver	00BC08NM0001	20	Nutrients Metals Major Ions
6	Similkameen River at Princeton	00BC08NL0001	20	Nutrients Metals Major Ions
8	Similkameen River Near U.S. Boundary	00BC08NL0005	20	Nutrients Metals Major Ions
7	Similkameen River above 20 Mile Creek	00BC08NL0008	20	Nutrients Metals Major Ions
82	Henri Creek above Confluence with Similakmeen River		2-5	
37	Moyie River at Kingsgate	00BC08NH0010	18	Nutrients Metals Major Ions
79	Kootenay River at Picture Valley	00BC08NG0002	11	Nutrients Metals Major Ions
40	Elk River at Phillips Bridge	00BC08NK0009	11	Nutrients Metals Major Ions

STATION DESCRIPTION

Project No. 27 (Con't)

MAP NUMBER	STATION LOCATION	NAQUADAT NUMBER	SAMPLING FREQUENCY	PARAMETERS
39	Kootenay River at Nicks Island	00BC08NH0005	11	Nutrients Metals Major Ions
41	Big Sheep Creek at Highway Bridge	00BC08NE0010	11	Nutrients Metals Major Ions
42	Kettle River at Gilpin Foot Bridge	00BC08NN0022	11	Nutrients Metals Major Ions
43	Kettle River at Carson	00BC08NN0021	11	Nutrients Metals Major Ions
48	Pend-D'Oreille River below International Boundary	00BC08NE0020	11	Nutrients Metals Major Ions
20	Pend-D'Oreille River @ Waneta	00BC08NE0029	11	Nutrients Metals Major Ions
58	Kootenay River at Canal Flats	00BC08NF0006	9	Nutrients Metals Major Ions
80	Columbia River at Revelstoke	00BC08ND0002	9	Nutrients Metals Major Ions
81	Columbia River at Donald	00BC08NB0007	9	Nutrients Metals Major Ions

FIGURE 16 WATER QUALITY BRANCH MONITORING STATIONS 1984-85
STATIONS DE SURVEILLANCE DE LA DIRECTION DE LA QUALITÉ DES EAUX 1984-85

FIGURE 17 WATER QUALITY BRANCH MONITORING STATIONS 1984-85
STATIONS DE SURVEILLANCE DE LA DIRECTION DE LA QUALITÉ DES EAUX 1984-85

D.6 HEADQUARTERS

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/85

REGION/HQ HQ
PROJECT NUMBER

PROJECT TITLE: WATER QUALITY OBJECTIVES PROGRAM REPORT

NATIONAL PROGRAM NAME: Canada-US and Interjurisdictional Water Management

ECS CODE: 1.1

GOALS:

To report to IWD Directors by September 1984 on the strategy of the water quality objectives program.

RATIONALE:

The resources of the objectives program are being expanded and a strategy is needed to outline the program priorities and how they will be met.

DESCRIPTION

A report is being drafted under the leadership of HQ with input from regional water quality objectives officers.

RESOURCES: ($'000)

	Total
PY TECH. PY PROF.	0.5
TOTAL PY	0.5
SALARIES	22.9
O & M	3.1
CONTRACTS	-
CAPITAL	-
TOTAL $	26.0

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/85

REGION/HQ HQ
PROJECT NUMBER

PROJECT TITLE: TRANSBOUNDARY RIVER SITUATION REPORTS

NATIONAL PROGRAM NAME: Canada U.S. and Interjurisdictional Water Management

ECS CODE: 1.1

GOALS:

Prepare situation reports on 5 or more transboundary rivers.

RATIONALE:

Commit to record and maintain information from Headquarters and the regions, detailing the issues and development concerning water quality objectives on transboundary rivers.

DESCRIPTION

In cooperation with the regions, situation reports will be prepared and updated according to a predetermined schedule. The content of these reports will focus on events affecting the status of water quality objectives on the international rivers. A review of the utility of these reports and of possible format changes will also be done.

RESOURCES: ($'000)

	Total
PY TECH. PY PROF.	0.7
TOTAL PY	0.7
SALARIES	32.0
O & M	4.4
CONTRACTS	-
CAPITAL	-
TOTAL $	36.4

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/85

REGION/HQ HQ
PROJECT NUMBER

PROJECT TITLE: OTTAWA RIVER WATER QUALITY OBJECTIVES

NATIONAL PROGRAM NAME: Canada U.S. and Interjurisdictional Water Management

ECS CODE: 1.1

GOALS:

Act as secretary to Ottawa River Committee and chairman of objectives subcommittee. Complete report on interim objectives.

RATIONALE:

The Provinces of ontario and Quebec, in consultation with IWD are developing water quality objectives as a result of water quality concerns and requirements for pollution abatement programs for the Ottawa River.

DESCRIPTION

A coordintation committee, including representatives from the provinces and the Water Quality Branch, will focus on monitoring activities, and a subcommittee is setting objectives.

RESOURCES: ($'000)

	Total
PY TECH.	
PY PROF.	0.5
TOTAL PY	0.5
SALARIES	22.9
O & M	3.1
CONTRACTS	-
CAPITAL	-
TOTAL $	26.0

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/85

REGION/HQ HQ
PROJECT NUMBER

PROJECT TITLE: PRAIRIE PROVINCES WATER BOARD - COMMITTEE ON WATER QUALITY

NATIONAL PROGRAM NAME: Canada - U.S. and Interjurisdictional Water Management ECS CODE: 1.1

GOALS:

Support PPWB objectives activities as needed.

RATIONALE:

The federal Government is committed to developing interagency bodies to assist in resolution of interprovincial water quality concerns.

DESCRIPTION

Division will provide support and attend meetings of PPWB Committee on Water Quality, to develop administrative procedures as well as requirements for specific rivers. Division provides briefing material to ADM/ECS on water quality concerns for use as chairman of PPWB.

RESOURCES: ($'000)

	Total
PY TECH. PY PROF.	0.1
TOTAL PY	0.1
SALARIES	4.6
O & M	0.6
CONTRACTS	-
CAPITAL	-
TOTAL $	5.2

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/85

REGION/HQ HQ
PROJECT NUMBER

PROJECT TITLE: CANADIAN SURFACE WATER QUALITY GUIDELINES

NATIONAL PROGRAM NAME: Canada - U.S. and Interjurisdictional Water Management ECS CODE: 1.1

GOALS:

1. Proposal to CCREM by June 1984
2. Workshop on objectives September 1984

RATIONALE:

Canadian surface water quality guidelines are needed by provincial and federal agencies to establish site-specific water quality objectives.

DESCRIPTION

RESOURCES: ($'000)

	Total
PY TECH.	
PY PROF.	1.0
TOTAL PY	1.0
SALARIES	45.8
O & M	6.3
CONTRACTS	-
CAPITAL	-
TOTAL $	52.1

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/85

REGION/HQ HQ
PROJECT NUMBER

PROJECT TITLE: CCREM TASK FORCE ON WATER QUALITY GUIDELINES

NATIONAL PROGRAM NAME: Canada - U.S. and Interjurisdictional Water Management

ECS CODE: 1.1

GOALS:

1. Report to CCREM by September 1984.
2. Draft "Canadian Surface Water Quality Guidelines" by September 1985.
3. Publish inventory of existing Canadian Water Quality guidelines by March 1985.

RATIONALE:

The September 1983 CCREM meeting expressed concern for differing water quality guidelines used across Canada. They struck a task force with WQB Director as Federal member.

DESCRIPTION

The guidelines task force is to report to council in September 1984 with an inventory of existing guidelines, a proposal for harmonising guidelines and a review of the utility of criteria and guidelines in addressing emerging water quality issues.

RESOURCES: ($'000)

	Total
PY TECH.	
PY PROF.	1.0
TOTAL PY	1.0
SALARIES	45.8
O & M	6.3
CONTRACTS	-
CAPITAL	-
TOTAL $	52.1

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/1985

REGION/HQ HQ
PROJECT NUMBER

PROJECT TITLE: ADVICE - CANADA-U.S. WATER QUALITY

NATIONAL PROGRAM NAME Canada-U.S. and Interjurisdictional Water Management

ECS CODE: 1.1

GOALS:

1. Provide a centre within the WQB for effectively responding to and acting for ECS Senior Management on boundary waters issues.
2. To provide information to Senior Management on Great Lakes boundary water problems under review by the Great Lakes Water Quality Board (IJC)SO
3. To assist in negotiations with the U.S. on acceptable PO_4 loadings to the Great Lakes and acceptable allocations to each of the parties.
4. To provide the Director, WQB, headquarters with advice on the operational activities of the Water Quality Branch.
5. To provide secretariat service to the Water Quality Subcommittee of the Interdepartmental Committee on Water for ICW.

RATIONALE:

Resolve interjurisdictional water resource problems and realize interjurisdictional water resource opportunities in accordance with national interests.

DESCRIPTION

Provide expert advice and guidance to DG, ADM and other senior staff.

RESOURCES: ($'000)

	Total
PY TECH.	
PY PROF.	1.0
TOTAL PY	1.0
SALARIES	61.7
O & M	4.9
CONTRACTS	-
CAPITAL	-
TOTAL $	66.6

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/1985

REGION/HQ HQ
PROJECT NUMBER 31007

PROJECT TITLE: POLICY, PROGRAM ADVISORY SERVICES

NATIONAL PROGRAM NAME Water Quality Management Data ECS CODE: 1.3

GOALS:

To develop required policy documents, promote coordination, and provide advice to regional, Departmental and where needed, international orgranizations

RATIONALE:

Improved efficiency by encouraging common approaches and reducing program duplication.

DESCRIPTION:

A WQB Electronic Data processing policy is being developed to respond to the need for advice and coordination concerning computer processing within WQB. Guidelines will be suggested for the interface between NAQUADAT, AWQUALABS and regional computers.

Information and advice on water quality and data handling procedures will be provided to a variety of international committees or agencies.

RESOURCES: ($'000)

	Total
PY TECH.	
PY PROF.	0.1
TOTAL PY	0.1
SALARIES	4.58
O & M	-
CONTRACTS	-
CAPITAL	-
TOTAL $	4.58

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/1985

REGION/HQ HQ
PROJECT NUMBER 32001

PROJECT TITLE: NAQUADAT - NATIONAL WATER QUALITY DATA BASE

NATIONAL PROGRAM NAME Water Quality Management Data ECS CODE: 1.3

GOALS:

To effectively archive, manage and disseminate Water Quality Branch data.

RATIONALE:

FPSIW Article 9 and support for all other WQB activities.

DESCRIPTION:

This project encompasses the basic core services of NAQUADAT - the continuing updating, maintaining and improving of the water quality data base. It includes safeguarding and managing all WQB analytical results and the management of the Dictionary file of parameters, as well as the five System 2000 data bases. It includes the provision of information and other aspects of electronic data processing of results. It covers training, program development and documentation as well as novel EDP applications such as prototype databases and colour graphics routines.

RESOURCES: ($'000)

	Total
PY TECH.	1.5
PY PROF.	2.3
TOTAL PY	3.8
SALARIES	173.9
O & M	80.0
CONTRACTS	-
CAPITAL	20.0
TOTAL $	273.9

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/85

REGION/HQ HQ
PROJECT NUMBER

PROJECT TITLE: WATER QUALITY AGREEMENTS

NATIONAL PROGRAM NAME: Water Quality Management Data ECS CODE: 1.3

GOALS:

1) Implementation and review of Quebec - Canada Monitoring Agreement.

2) Complete negotiations with Alberta, Newfoundland, Manitoba, British Columbia and Saskatchewan including background material.

3) To develop and implement biomonitoring techniques as routine monitoring procedures.

4) Produce review of monitoring strategies for objectives and effects monitoring of multi media sampling.

RATIONALE:

There is a need for a single comprehensive water quality assessment strategy in Canada using multi-media sampling. The cost efficient means of achieving this assessment is through federal-provincial agreements.

DESCRIPTION

As described in the Water Quality Branch Strategy for Assessment of the Quality of the Aquatic Environment.

RESOURCES: ($'000)

	Total
PY TECH.	
PY PROF.	4.0
TOTAL PY	4.0
SALARIES	183.08
O & M	54.0
CONTRACTS	-
CAPITAL	1.0
TOTAL $	238.08

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/1985

REGION/HQ HQ
PROJECT NUMBER 31003

PROJECT TITLE: FEDERAL-PROVINCIAL AGREEMENT ON DATA MANAGEMENT

NATIONAL PROGRAM NAME Water Quality Management Data ECS CODE: 1.3

GOALS:

To archive and provide data on water quality in accordance with federal/provincial agreements.

RATIONALE:

Data management is an integral part of the federal-provincial agreements.

DESCRIPTION:

The comparability of federal and provincial data management techniques will be evaluated and the mechanisms and costs of timely data exchange and storage will be determined. Computer programs will be prepared to transfer data between provincial signatories and NAQUADAT. The performance target for data exchange is to be able to verify and store 50% of the data received from cooperating provincial agencies within two weeks and to be able to transfer 90% of federal data requested by a province.

RESOURCES: ($'000)

	Total
PY TECH.	0.2
PY PROF.	0.3
TOTAL PY	0.5
SALARIES	22.9
O & M	5.0
CONTRACTS	-
CAPITAL	-
TOTAL $	27.9

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1983/1984

REGION/HQ HQ
PROJECT NUMBER 31005

PROJECT TITLE: INTERPRETIVE AND DATA REPORTS

NATIONAL PROGRAM NAME Water Quality Management Data ECS CODE: 1.3

GOALS:

To produce data and interpretative reports on water quality conditions which further understanding of the aquatic environment.

RATIONALE:

FPSIW Article 9 - Provision of information, advice and analysis.

DESCRIPTION:

Detailed data reports will be produced for Alberta, Saskatchewan, Manitoba and Northwest Territories and a summary data report will be published for British Columbia depending on Regional input. This project is used to cover costs and efforts associated with data analysis for WQB. This would include computer work associated with interpretative studies, noncompliance reporting and other requests for data processing.

RESOURCES: ($'000)

	Total
PY TECH.	0.3
PY PROF.	0.3
TOTAL PY	0.6
SALARIES	27.5
O & M	10.0
CONTRACTS	-
CAPITAL	-
TOTAL $	37.5

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1983/1984

REGION/HQ HQ
PROJECT NUMBER 31006

PROJECT TITLE: MANUALS, GUIDELINES AND OTHER PUBLICATIONS

NATIONAL PROGRAM NAME Water Quality Management Data ECS CODE: 1.3

GOALS:

To provide scientific information and advice on water quality.

RATIONALE:

Documentation and dissemination of the work done in the Water Quality Branch and the results obtained are considered integral parts of the Branch programs. See also "Water Quality Branch - Objectives and Programs" paper.

DESCRIPTION:

The following publications are scheduled for 1984/85:

1) Annual NAQUADAT Dictionary of Parameter codes
2) 1984 NAQUADAT Station List
3) Draft outline of new NAQUADAT Users Guide

RESOURCES: ($'000)

	Total
PY TECH.	0.2
PY PROF.	0.4
TOTAL PY	0.6
SALARIES	27.5
O & M	2.0
CONTRACTS	-
CAPITAL	-
TOTAL $	29.5

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/1985

REGION/HQ HQ
PROJECT NUMBER

PROJECT TITLE: WATER QUALITY DATA PRESENTATION AND ANALYSIS MANUAL AND WORKSHOPS

NATIONAL PROGRAM NAME Water Quality Management Data ECS CODE: 1.3

GOALS:

Improve the methods for water quality data presentation and analysis and their use by WQB Data Interpretation Officers.

RATIONALE:

WQB is placing increased emphasis on the interpretion of data collected and reporting of water quality information obtained. Preparation of the manual, combined with the series of workshops for familiarizing the data interpretation officers with its contents are important steps in augmenting the WQB's interpretive reports output.

DESCRIPTION:

1. Preparation of manuscript of "Water Quality Data Presentation and Analysis" Manual.

2. Organization of "Water Quality Data Presentation and Analysis" Workshops in three regions.

RESOURCES: ($'000)

	Total
PY TECH.	
PY PROF.	
TOTAL PY	0.6
SALARIES	27.5
O & M	5.0
CONTRACTS	-
CAPITAL	-
TOTAL $	32.5

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/1985

REGION/HQ HQ
PROJECT NUMBER

PROJECT TITLE: WATER QUALITY BRANCH PUBLICATIONS

NATIONAL PROGRAM NAME Water Quality Management Data ECS CODE: 1.3

GOALS:

Preparation and publication of a series of annual WQB publications.

RATIONALE:

To increase the efficiency and effectiveness of its operations WQB has been publishing on an annual basis, reports describing ongoing projects, and the publications authored by WQB's staff.

DESCRIPTION:

The following reports will be compiled:

1. WQB Activities 1984/85
2. List of Publications 1983.

RESOURCES: ($'000)

	Total
PY TECH.	
PY PROF.	0.3
TOTAL PY	0.3
SALARIES	13.7
O & M	5.3
CONTRACTS	-
CAPITAL	-
TOTAL $	19.0

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PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/1985

REGION/HQ HQ
PROJECT NUMBER

PROJECT TITLE: WATER QUALITY INTERPRETIVE REPORTS

NATIONAL PROGRAM NAME Water Quality Management Data ECS CODE: 1.3

GOALS:

Preparation and publication of water quality interpretive reports.

RATIONALE:

In the last several years the issue of water quality has come to the forefront of resource and environmental management aspects of Canadian society. In this context the water quality interpretive reports have an important role in bringing the data collected to the resource managers in a form which can be used in the decision making process. In addition, the reports inform the Canadian public about the state of water resources in the country.

DESCRIPTION

Included in the 1984/1985 are the following projects:

- Publication of the Mackenzie River Basin and New Brunswick interpretive reports.
- Completion of draft report on physical parameters and major ions in important river basins of Canada.

RESOURCES: ($'000)

	Total
PY TECH.	
PY PROF.	1.5
TOTAL PY	1.5
SALARIES	68.6
O & M	17.0
CONTRACTS	-
CAPITAL	25.0
TOTAL $	110.6

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PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/1985

REGION/HQ HQ
PROJECT NUMBER

PROJECT TITLE: FIELD QUALITY ASSURANCE MANUAL

NATIONAL PROGRAM NAME Water Quality Management Data ECS CODE: 1.3

GOALS:

Implementation as part of the federal-provincial agreements, of a field and laboratory quality assurance program.

RATIONALE:

The quality assurance is an integral part of any monitoring program. It ensures that the data collected are reliable and that they respond to the objectives of the monitoring program.

DESCRIPTION

During the fiscal year a WQB "Field Quality Assurance" manual will be prepared jointly by the regional and headquarters staff, under the coordination of headquarters office.

RESOURCES: ($'000)

	Total
PY TECH.	
PY PROF.	0.4
TOTAL PY	0.4
SALARIES	18.3
O & M	8.0
CONTRACTS	-
CAPITAL	-
TOTAL $	26.3

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PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/1985

REGION/HQ HQ
PROJECT
NUMBER

PROJECT TITLE: GLOBAL ENVIRONMENTAL MONITORING SYSTEM

NATIONAL PROGRAM NAME Water Management Data ECS CODE: 1.3

GOALS:

To coordinate the Canadian input to the GEMS/WATER monitoring scheme.

RATIONALE:

The Global Environmental Monitoring System (GEMS) began as an outcome of the United Nations Conference on the Human Environment held in Stockholm in June 1972. The water component (GEMS/Water) of this project is a joint UNESCO and WHO operation which attempts to monitor long-term trends in water pollution of a selected number of rivers, lakes and groundwater around the world. The purpose of the monitoring is to detect any serious deterioration of the environment as a result of the introduction of man-made pollutants, and to provide advance warning to Mankind. Under the program a global network of monitoring stations has been established and uniform methods of sampling and analysis are being promoted. The data from the world-wide monitoring program is managed in the GLOWDAT database facility at the Canada Centre for Inland Waters.

DESCRIPTION

The Water Quality Branch provides the Canadian input to the GEMS program. Data from selected rivers and lakes are forwarded periodically from NAQUADAT to the GLOWDAT data handling system. The GEMS requirements are met through regular WQB monitoring but with a commitment to maintain on-going monitoring at the 13 sites designated for the global program. Additionally, the WQB provides support and advice for GLOWDAT data management as requested by the Collaborating Centre at NWRI, as well as expert advice on project reviews and evaluation of the entire GEMS program.

A recent evaluation of the GEMS/WATER data has suggested changes required to the monitoring scheme. The WQB will adapt to respond to identified needs.

RESOURCES: ($'000)

	Total
PY TECH.	
PY PROF.	0.1
TOTAL PY	0.1
SALARIES	4.58
O & M	-
CONTRACTS	-
CAPITAL	-
TOTAL $	4.58

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/85

REGION/HQ HQ
PROJECT NUMBER

PROJECT TITLE: ANALYTICAL SERVICES ENVIRONMENTAL PARAMETERS

NATIONAL PROGRAM NAME: Water Quality Management Data ECS CODE: 1.3

GOALS:

To provide a National analytical support service to inter-departmental agencies and to maintain analytical capabilities for complex chemical and physical analyses on a wide variety of water, wastewater, precipitation, sediment, biota and other substrates related to the aquatic ecosystem in support of studies related to environmental management and protection and related research.

RATIONALE:

As part of the ECS mandate for the generation of physical, chemical and biological environmental data in relation to the Canada Water Act, Canada/U.S. Water Quality Agreement, Fisheries Act, Environmental Contaminants Act and the Federal Policy Statement on Inland Waters.

DESCRIPTION

Provision of direct analytical services to the following activities:

- Programs of the five Water Quality Branch regions across Canada
- NWRI research projects
- Great lakes Water Quality program
- Operation of the ship board laboratory at NWRI to analyse Great Lakes waters
- Atmospheric Environmental Services precipitation program
- Environmental Protection Services program
- GLFRB research and monitoring projects

RESOURCES: ($'000)

	Total
PY TECH.	
PY PROF.	
TOTAL PY	34.0
SALARIES	860.0
O & M	352.4
CONTRACTS	-
CAPITAL	180.0
TOTAL $	1392.4

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/1985

REGION/HQ HQ
PROJECT NUMBER

PROJECT TITLE: WQB - MANAGEMENT AND ADMINISTRATION

NATIONAL PROGRAM NAME Management and Administration ECS CODE: 1.6

GOALS:

Ensure effective and efficient Management of all aspects of Water Quality Branch HQ.

RATIONALE:

Administrate policies, programs, and activities of WQB-HQ in an effective and efficient manner.

DESCRIPTION

Timely completion of Budget Year Work plans in February 1985. Timely completion of succesion plans. Mid-year third quarter and year-end performance reports in April 1984, October 1984 and January 1985. Completion of Long Term Operational Plans in December 1984. Training and development plan by January 1985.

Completion of all administrative and financial reports in advance of due date.

Staff appraisals completed by March, 1984.

RESOURCES: ($'000)

	Total
PY TECH. PY PROF.	0.6
TOTAL PY	0.6
SALARIES	27.5
O & M	14.1
CONTRACTS	-
CAPITAL	-
TOTAL $	41.6

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/1985

REGION/HQ HQ
PROJECT NUMBER

PROJECT TITLE: WQB - MANAGEMENT AND ADMINISTRATION

NATIONAL PROGRAM NAME Management and Administration ECS CODE: 1.6

GOALS:

Continue implementation of IWD Laboratory consolidation plan for operational laboratories.

Direct preparation and obtain approval for a National Water Quality Assessment Program.

RATIONALE:

An efficient and effective laboratory program is essential. Water Quality Branch must develop an effective and efficient National Water Quality Assessment program.

DESCRIPTION

Complete effective new laboratory organizational structure including the development and implementation of a management system for the operation of the National Water Quality Laboratory at CCIW Burlington.

RESOURCES: ($'000)

	Total
PY TECH.	
PY PROF.	1.0
TOTAL PY	1.0
SALARIES	45.7
O & M	29.6
CONTRACTS	-
CAPITAL	-
TOTAL $	75.3

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/1985

REGION/HQ HQ
PROJECT NUMBER

PROJECT TITLE: WQB - MANAGEMENT AND ADMINISTRATION

NATIONAL PROGRAM NAME Management and Administration ECS CODE: 1.6

GOALS:

Provisions of Policy, Direction and Advice to IWD and the Water Quality Branch.

RATIONALE:

Plan, manage and control policies, program and activities of WQB-HQ and regional offices in an effective and efficient manner.

DESCRIPTION

Provision of policy, advice and guidelines to regional offices in the conduct of Water Quality Branch activities including monitoring and surveys, laboratory operations, data storage and retrieval, data interpretation and Water Quality Objectives activities.

Provision of information and advice to the DG-IWD and ADM-ECS as well as other federal officials on aquatic environmental issues.

RESOURCES: ($'000)

	Total
PY TECH.	
PY PROF.	1.4
TOTAL PY	1.4
SALARIES	64.0
O & M	32.5
CONTRACTS	-
CAPITAL	-
TOTAL $	96.5

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/85

REGION/HQ HQ
PROJECT NUMBER

PROJECT TITLE: SAFE DRINKING WATER

NATIONAL PROGRAM NAME: Toxic Chemicals

ECS CODE: 4.1

GOALS:

To provide DOE review of NHW plan for Safe Drinking water and Safe Drinking Water Bill.

RATIONALE:

NHW is planning a Safe Drinking Water Bill and other measures to ensure safe drinking water supplies.

DESCRIPTION

Chair DOE group to provide advice and information to ADMs of ECS and EPS and to the Minister.

RESOURCES: ($'000)

	Total
PY TECH.	
PY PROF.	0.1
TOTAL PY	0.1
SALARIES	4.6
O & M	0.6
CONTRACTS	-
CAPITAL	-
TOTAL $	5.2

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/85

REGION/HQ HQ
PROJECT NUMBER

PROJECT TITLE: TOXIC CHEMICALS - IWD

NATIONAL PROGRAM NAME: Toxic Chemicals

ECS CODE: 4.1

GOALS:

To act as focal point of toxic chemical activities in IWD.

RATIONALE:

Toxic Chemicals is a departmental integrated program: it is necessary to have an integrated IWD approach.

DESCRIPTION

The division will fulfil its goals by:

- providing advice to DG/IWD
- providing comments to ECS Toxics Coordinator
- coordinating IWD requests for TOXFUND

RESOURCES: ($'000)

	Total
PY TECH. PY PROF.	0.1
TOTAL PY	0.1
SALARIES	4.6
O & M	0.6
CONTRACTS	-
CAPITAL	-
TOTAL $	5.2

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/1985

REGION/HQ HQ
PROJECT NUMBER

PROJECT TITLE: CANSOC II

NATIONAL PROGRAM NAME Toxic Chemicals

ECS CODE: 4.1

GOALS:

Provide information on the presence of organic compounds in precipitation.

RATIONALE:

The atmospheric transport of toxic organic compounds is of environmental concern and WQB is operating the only network which addresses specifically this issue.

DESCRIPTION

The Sangamo samplers will be located at approximately 8 new locations and the CANSOC network will be restarted using a modified sampling methodology (solvent extraction after each event).

RESOURCES: ($'000)

	Total
PY TECH.	
PY PROF.	0.5
TOTAL PY	0.5
SALARIES	22.9
O & M	10.0
CONTRACTS	-
CAPITAL	-
TOTAL $	32.9

IW 0.3
P: 0.2

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/1985

REGION/HQ HQ
PROJECT NUMBER

PROJECT TITLE: EVALUATION OF PROTOTYPE PRECIPITATION SAMPLER

NATIONAL PROGRAM NAME Toxic Chemicals ECS CODE: 4.1

GOALS:

Provide information on the presence of toxic organic compounds in precipitation in Canada.

RATIONALE:

The Sangamo type precipitation samplers previously used in the CANSOC network had a series of shortcomings which affected the quality of the data collected. Specifications for a new sampler and a prototype will be ready in July 84.

DESCRIPTION

This project refers to the evaluation of the prototype sampler. It will be carried out over a 6-month period and it will be done jointly by WQB, NWRI and AES staff during the period of July-Jan 85..

RESOURCES: ($'000)

	Total
PY TECH.	
PY PROF.	0.3
TOTAL PY	0.3
SALARIES	13.73
O & M	10.0
CONTRACTS	-
CAPITAL	-
TOTAL $	23.73

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PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/1985

REGION/HQ HQ
PROJECT NUMBER

PROJECT TITLE: WQB TOXIC CHEMICALS PROGRAM

NATIONAL PROGRAM NAME Toxic Chemicals ECS CODE: 4.1

GOALS:

Provide coordination between regional and HQ offices of WQB in the Toxic Chemicals Program.

RATIONALE:

The Toxic Chemicals program, because of its complexity and because it is still in its narrative stage requires extensive consultations between HQ and regions to ensure that the views and interest of WQB are reflected in the program.

DESCRIPTION

Participates at meetings related to Toxic Chemicals Program.

Briefs WQB management of the state of the program.

Informs and maintains close liaison with WQB regional offices re. toxic chemicals project.

RESOURCES: ($'000)

	Total
PY TECH.	
PY PROF.	
TOTAL PY	0.2
SALARIES	9.2
O & M	2.0
CONTRACTS	-
CAPITAL	-
TOTAL $	11.2

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PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/1985

REGION/HQ HQ
PROJECT NUMBER

PROJECT TITLE: RADIONUCLIDES MONITORING NETWORK

NATIONAL PROGRAM NAME Toxic Chemicals ECS CODE: 4.1

GOALS:

To quantify levels of radionuclides in the aquatic environment at locations where these compounds have the potential of being found, to detect trends and to assess their effects on the aquatic ecosystem.

RATIONALE:

Radionuclides are highly toxic to human and aquatic life. Their mining and use (e.g. nuclear power) have the associated risk that these compounds reach the aquatic environment.

DESCRIPTION

Ten locations chosen for their potential risk of finding radionuclides are sampled monthly. An annual composite sample is then prepared and analysed at NWRI. If a sample shows concentrations above baseline values then the monthly samples are analysed in order to locate the individual samples showing high readings. The sampling is done by the regional offices.

RESOURCES: ($'000)

	Total
PY TECH.	
PY PROF.	0.1
TOTAL PY	0.1
SALARIES	4.6
O & M	-
CONTRACTS	-
CAPITAL	-
TOTAL $	4.6

Map No.	NAQUADAT NO.	STATION LOCATION
		National Radionuclide Program
1	00MA05OC0001	Red River Station R-1, Manitoba
2	00MA05NF0001	Souris River Station S-1, Manitoba
3	01NW06MA0001	Baker Lake Station B-1, NWT
4	00NS01FJ0021	McAskill Brook, Nova Scotia
5	00NF03NG0004	Ranger Brook, Labrador
6	02NB01AQ0001	Moose Creek, New Brunswick
7	02NB01BU0002	Petitcodiac River, New Brunswick
8	00NS01DC0001	Annapolis River, Nova Scotia
9	00ØN02HA0019	Niagara River, Ontario
10	00ØN02MA0030	St. Lawrence River at Wolfe Island, Ontario
11	00MA05KH0001	Saskatchewan River above Carrot River, Manitoba
12	00SA11AE0008	East Poplar River, Saskatchewan

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/85

REGION/HQ HQ
PROJECT NUMBER

PROJECT TITLE: ANALYTICAL SERVICES - TOXIC SUBSTANCES

NATIONAL PROGRAM NAME: Toxic Substances

ECS CODE: 4.1

GOALS:

To provide a National analytical support service and to maintain complex analytical methodology on organic and inorganic toxic substances on a wide variety of water, wastewater, precipitation, sediment, biota and other related aquatic substrates in support of toxic substances studies carried out by environmental agencies.

RATIONALE:

As part of the ECS mandate for the generation of physical chemical and biological environmental data in relation to the Canada Water Act, Canada/U.S. Water Quality Agreement, Fisheries Act, Environmental Contaminants Act and the Federal Policy Statement on Inland Waters.

DESCRIPTION

Provision of direct analytical services to the following activities:

- Programs of the five Water Quality Branch regions across Canada
- NWRI research projects
- Great lakes Water Quality program
- Operation of the ship board laboratory at NWRI to analyse Great Lakes waters
- Atmospheric Environmental Services precipitation program
- Environmental Protection Services program
- GLRFB research and monitoring projects

RESOURCES: ($'000)

	Total
PY TECH.	
PY PROF.	
TOTAL PY	4.0
SALARIES	100.0
O & M	20.0
CONTRACTS	-
CAPITAL	-
TOTAL $	120.0

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/1985

REGION/HQ HQ
PROJECT NUMBER 33001

PROJECT TITLE: LRTAP DATA

NATIONAL PROGRAM NAME Long Range Transport of Airborne Pollutants

ECS CODE: 4.2

GOALS:

To maintain a national data base related to long range transport of airborne pollutants.

RATIONALE:

FPSIW Article 9. High priority Departmental program.

DESCRIPTION:

Acquire, code, update and manage designated data related to LRTAP. This includes surface water and precipitation chemisty results to NAQUADAT. Specific new data sets to be added to NAQUADAT; Lac Laflamme and Quebec network data and the Department of Fisheries and Oceans surface water data from the Experimental Lakes Area. Close cooperation will be maintained with NWRI and transfers of results to NWRI will be arranged as required.

RESOURCES: ($'000)

	Total
PY TECH.	0.05
PY PROF.	0.15
TOTAL PY	0.2
SALARIES	9.15
O & M	2.0
CONTRACTS	-
CAPITAL	-
TOTAL $	11.15

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/1985

REGION/HQ HQ
PROJECT NUMBER

PROJECT TITLE: AQUATIC EFFECTS MONITORING

NATIONAL PROGRAM NAME LRTAP

ECS CODE: 4.2

GOALS:

Oversee the operation of the LRTAP effects monitoring network in eastern Canada and ensure its efficient operation according to the monitoring plans.

RATIONALE:

Long range atmospheric transport has been identified as a very important pathway by which various pollutants reach aquatic ecosystems. LRTAP is a priority in DOE.

DESCRIPTION

Ensure that LRTAP Aquatic Monitoring is carried out following an approved monitoring plan. Audit the network QA/QC procedures. Prepare a report describing LRTAP monitoring in Canada. Analyse data from LRTAP study sites.

RESOURCES: ($'000)

	Total
PY TECH.	
PY PROF.	1.1
TOTAL PY	1.1
SALARIES	50.2
O & M	5.0
CONTRACTS	-
CAPITAL	-
TOTAL $	55.3

PROJECT DESCRIPTION
WATER QUALITY BRANCH
1984/1985

REGION/HQ HQ
PROJECT NUMBER

PROJECT TITLE: PRECIPITATION CHEMISTRY MONITORING

NATIONAL PROGRAM NAME Long Range Transport of Airborne Pollutants

ECS CODE: 4.2

GOALS:

1. Provide liaison between AES and IWD
2. Prepare a "Precipitation Sampling Manual" fir ISO
3. Provide WQB LRTAP coordination

RATIONALE:

Long range atmospheric transport has been identified as a very important pathway by which various pollutants reach aquatic ecosystems. LRTAP is a priority in DOE.

DESCRIPTION

1. Member of the AES/IWD Scientific Advisory Committee for CAPMON.
2. Review comments and prepare 2nd Draft of ISO Manual by March 1985.
3. Keep WQB Management up-to-date on LRTAP issues as required. Attend the necessary LRTAP meetings to carry out this function.

RESOURCES: ($'000)

	Total
PY TECH.	
PY PROF.	0.2
TOTAL PY	0.2
SALARIES	9.2
O & M	5.0
CONTRACTS	-
CAPITAL	-
TOTAL $	14.2